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Transfer of study skills from one context to another:
promoting and inhibiting factors in a group of 13-14
year old pupils.

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requirements of the Nottingham Trent University
for the degree of Doctor of Philosophy.

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in collaboration with The Meden School, Warsop, Nottinghamshire
and Buckler's Mead School, Yeovil, Somerset.

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Abstract.

This research programme explores conditions which may promote or inhibit the transfer of learning. That learning can be transferred from one area of the curriculum to another is a commonsense notion implicit in education. However, research suggests that although transfer of learning is desirable, it does not often happen.

The research programme was carried out within the action research paradigm, which it is argued is the most appropriate paradigm for classroom practitioner research. Two forms of action research are identified, self-evaluation action research and emancipatory action research, and it is argued that this research programme is an example of emancipatory action research.

A mixed ability class of fourteen year old pupils worked, over a period of six weeks, through a Study pack which introduced them to library research skills. The Study pack led the pupils through the research process, as defined by Irving (1985), and each of the pupils produced a research report on a subject of their own choice. Four months later an RE assignment was used as the transfer task. Here, the pupils were expected to use library research to satisfactorily complete the assignment, but they were not directed to.

Research into the transfer of learning has almost exclusively focused on university students and pupils with special learning difficulties, and has

concluded that engaging in metacognition is the most significant influence on transfer. This research programme has identified the following conditions which appeared, in this sample of mixed ability fourteen year old pupils, to promote or inhibit the transfer of learning.

- (a) pupils' engagement in metacognition while learning the library research skills, and while engaged in the transfer task;
- (b) pupils' understanding of the demands of the task;
- (c) pupils' engagement in the transfer task.

The research programme concludes by offering suggestions to teachers who want to encourage their pupils to transfer the skills they have learnt in one context and to apply them to another.

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Chapter One.

Background to the Research Programme.

Chapter One: Background to the Research.

Study Skills as Transferable Skills.

1.1 This research programme had as its aim: To identify factors which promote and factors which inhibit the transfer of certain kinds of study skills from one context to another. The project emerged from a personal view based on my experience as an English teacher in a secondary school, that the transfer of learning was a more problematic issue than is often assumed by curriculum developers. This chapter explains the influences which led me to engage in a research programme, and describes the process through which the research programme became clearly defined.

1.2 In the 1980s a number of curricular developments made reference to the concept of transfer of learning. For example, "A Basis For Choice" (FEU,1982:13) argued that:

"courses need to ensure that options can be kept open for students by the learning of generally applicable skills and capacities, and the ability to transfer them."

while "Common Core - Teaching and Learning" (FEU,1984:15) claimed that

"Skills and knowledge acquired in one context are more likely to be transferred to another if transferability is included in the basic design of the programme."

1.3 These curricular developments were presenting the view that there are generally transferable skills which can be taught in any curriculum area and which can then be transferred by pupils to other curriculum areas whenever appropriate. They also argued that it was possible to define teaching strategies which would enhance this transfer.

1.4 These views were attractive ones and the sentiments they expressed had clearly influenced the "Study Skills" movement of the late 1970s and early 1980s. During this period a great deal of work was carried out in schools to develop Study Skills courses as part of the Pastoral Curriculum in the belief that the skills would transfer to all areas of the academic curriculum. However, my personal experience suggested that there was very little transfer from the Study Skills lessons to the rest of the curriculum. Research by Tabberer and Allman (1983) into fifty-four sixth forms demonstrated that my experience was very widely shared. They found that study skills were often taught as part of the pastoral curriculum but that Heads of Department complained that there was a general inability on the part of the students to "link these elements of study skill provision to the actual demands that students encountered when learning their subjects"(p.61).

1.5 The curricular developments of the late 1970s and early 1980s had as their dominant focus a definition of study skills which could be considered to be transferable. The issues of teaching-learning styles and their potential to promote transfer were identified as important issues but then were largely ignored. This omission stimulated me into formulating my own research proposal. Initially, I wished to explore how far it had been possible to define transferable skills, and then to consider whether teaching-learning styles could be identified which would promote the transfer of these skills.

1.6 More recently, the defining of transferable skills has been addressed by the NCC in its document "The Whole Curriculum: Part Three" (1990). Here,

under the broad heading of 'SKILLS' it is claimed that:

There are many of these - e.g. communication skills (oracy, literacy), numeracy, problem solving and study skills which can be developed coherently throughout the curriculum provided that teachers adhere to the principles of sharing responsibility. All these skills are transferable, chiefly independent of context and can be developed in different contexts across the curriculum." (p.3)

Further, it is claimed that from lists of core skills drawn up by "many organisations" it was possible to isolate the following as core transferable skills:

- communication skills;
- numeracy skills;
- study skills;
- problem solving skills;
- personal and social skills;
- information technology skills.

1.7 The National Curriculum has identified five Cross Curricular Themes, and within each of the five Cross Curricular Themes these transferable skills are defined to a greater or lesser extent. The emerging definition of study skills offered by the National Curriculum was very interesting to me as an English teacher as it borrowed extensively from English National Curriculum Attainment Targets. That is, study skills are defined in terms of retrieving, analysing, interpreting and evaluating information. The National Curriculum has in fact isolated as study skills those skills which would generally be classified as library research skills. This suggested that it would be possible for me in my research to focus on library research skills as transferable skills.

Library Research Skills as Transferable Skills.

1.8 However, the defining of library research skills as transferable skills by the National Curriculum raises some interesting issues. Although it is a common sense notion that library research skills should be transferable skills, the experience of the 1980s suggested that study skills generally did not successfully transfer. Was it that study skills are not in fact transferable skills? Alternatively, was it that study skills tended not to transfer because "transferability", as referred to by the FEU, had not been built into the pupils' learning? It seemed appropriate to focus on the transferability of one specific group of study skills, library research skills, but I felt it was necessary to ascertain how far library research skills were seen to be important skills by teachers across the curriculum. I conferred with all the Heads of Department in the school at which I taught and asked each of them which skills traditionally taught by English teachers did they consider relevant to their own curriculum needs. In this way I hoped to identify a set of skills which, in the context of our school at least, teachers either thought were transferable, or would like to be transferable. If this were possible it would then be possible to explore whether pupils could be taught these skills in English, and then transfer them, when appropriate, to another curriculum area.

1.9 The Heads of Department all considered spelling and punctuation to be very high priorities, but it was also clear that they all wanted pupils to have skills which could be termed library research skills. They wanted pupils to be able to retrieve information from the library, make their own notes, and be able to evaluate the information they had researched.

However, the Heads of Department were all disappointed by the quality of the pupils' research skills. Library research skills are National Curriculum requirements in English, Science, Design and Technology, History and Geography. A summary of these requirements in English, Science, and Design and Technology (Library Association, 1991) indicates that information retrieval, processing of information and evaluation of the research carried out are all requirements of these subjects from level 2-10. Similar requirements are made in History and Geography. However, the Heads of Department saw the teaching of these skills as the responsibility of English teachers. As a consequence of my discussions with the Heads of Department, and my reading of the deliberations of various curricular developments, I chose to focus my research on library research skills as skills which were potentially transferable skills. It was then necessary to explore the research literature on transfer, and on teaching-learning styles which may promote transfer.

The Transfer of Skills.

1.10 Much of the research literature on the transfer of learning has focused on the learning and subsequent transfer of very specific skills which have little potential for transfer unless the new problems are almost identical to the conditions in which the original learning took place. For example, Sugden (1987) taught children with learning difficulties the mnemonic strategy of verbal elaboration. The children were given twelve pictures to memorise, and as an aid they were told that the pictures could be arranged in categories such as clothing, food, and cooking utensils. Sugden felt that he had found evidence of transfer of learning when the

children used the same strategy while trying to memorise twelve different pictures three months later. I felt that this learning strategy was of such a low order that any evidence of transfer was really evidence of identical elements transfer: that is, the strategy was used to solve a new problem which was very similar to the problem in the learning situation. This form of transfer, although necessary in learning, offered little potential for the transfer of learning across curriculum areas to solve a variety of new problems in new situations which were less obviously similar in nature. Consequently, the research findings relating to identical elements transfer did not seem to offer anything significant for the study of the transfer of library research skills.

1.11 However, it became clear from the research literature that the concept of transfer could be explored at a more fruitful level by focusing on the transfer of cognitive skills, or learning strategies. Instead of focusing on discrete lower order skills such as mnemonics, it was more useful in the school context to focus on higher order skills. Nisbet (1976:26) defines higher order skills as skills "which control and regulate the more task specific or more practical skills. They tend to be more general in nature, the sort of activities that are going to be needed time and time again in all sorts of different situations and problems." From this perspective library research skills would be seen as higher order skills (Irving, 1985) and could be explored as transferable skills. Two conditions have been suggested as evidence of transfer: (a) the intelligent or appropriate use of a higher order skill on a problem which is significantly different in nature to the learning situation, and (b) the re-arranging of the stages of a higher order skill in order to solve a problem. In the context of the

transfer of library research skills in schools it is possible to consider examples which may satisfy each of these conditions. (a) The two project questions "How can Formula One racing circuits be made safer?" and "Should the death penalty be re-introduced for some serious crimes?" require the use of library research skills to be successfully used but they can be considered to be significantly different tasks. (b) In terms of changing the order of use, a pupil may engage in information retrieval, evaluate the information he had retrieved, and instead of processing that information engage in more information retrieval because he felt he did not have all the information he required.

Metacognition and the Transfer of Skills.

1.12 Research also suggested that for this intelligent use or adaptation of higher order skills to occur, students need to be made aware of the way that they are thinking. This introspective knowledge has been termed metacognition (Flavell:1979). The decision to use a particular strategy, for example, would be a metacognitive decision. It seemed that it would not be productive to teach students higher order skills if they did not have the ability and opportunity to monitor and evaluate the new skills both while they were learning them, and in transfer situations. I felt that if teachers wished students to transfer their learning it would be important to identify learning-teaching styles which would improve students' abilities to engage in metacognition while learning the new higher order skill. A trend in the teaching of English, for example, which seems to have been influenced by this belief, sees writing as an expression of personal meaning, and is more concerned with the process of writing than the product

(Britton,1972). Learners are encouraged through their writing to assess their own reactions to writing tasks, to identify their own strengths and weaknesses, and to use this learning to further improve their performance. It seemed that it would be possible to identify strategies which, when used to teach cognitive skills, would enhance the possibility of subsequent transfer. This may have been what the FEU were alluding to when they referred obliquely to transferability being built into programmes of learning. However, the research literature on metacognition and transfer had largely centred on university students (see for example Marton and Saljo,1976a), and it was not clear whether the findings would also apply to secondary school pupils.

Supported Self-Study and Transfer.

1.13 In 1984 I had written an M.Ed dissertation on the use of independent learning in an A-level English course and had in the process read extensively about supported self-study. It seemed to me from this experience that supported self-study was an appropriate teaching strategy to help students to monitor and evaluate their learning. Supported self-study is a form of resource based learning, or independent learning, but the emphasis is on helping the students to manage the learning process through tutorials. Students follow carefully prepared, structured materials and work independently, but in addition regular tutorials in small groups help the students learn more effectively. Waterhouse (1983a) argues that the strength of supported self-study is that it enables students to go beyond the mere acquisition of skills towards the questioning of personal organisation and styles of learning. Most research into the value of

supported self-study has been carried out in sixth forms in secondary schools (see for example Royce, 1988). I felt that it would be interesting to explore whether younger children would similarly benefit from supported self-study. Consequently, it now appeared profitable to explore whether through the pupils' active involvement in their learning, and with regular tutorial support, they could learn a generalisable skill and at the same time engage in metacognition through the use of a supported self-study programme.

An Analysis of Library Research Skills.

1.14 Although I had made the decision that the generalisable skill I would explore would be library research skills, as loosely defined by the English National Curriculum, it was important to more clearly define what I understood by library research skills. Irving (1985), in her work with the British Library, had analysed the demands made on secondary school pupils when engaged in "project work". She generalised the research skills which would be required to successfully complete projects into nine main steps:

1. Formulation and analysis of the information need.
2. Identification and appraisal of likely sources of information.
3. Tracing and locating individual resources.
4. Examining, selecting and rejecting individual resources.
5. Interrogating, or using individual resources.
6. Recording and storing information.
7. Interpretation, analysis, synthesis and evaluation of information.
8. Shape, presentation and communication of information.

9. Evaluation of the project.

1.15 This analysis appeared to be most helpful. I had chosen library research skills as a higher order skill to explore because it was a genuine issue of concern for all the Heads of Department I had approached, while Irving's analysis of the research process had grown from the actual demands of library research in secondary schools. Consequently, my choice of library research skills and the definition of what was meant by library research skills had emerged out of genuine pupil needs rather than purely theoretical considerations. Also, although it is clear that in practice the library research process should not in fact be a slavish following of prescribed steps, Irving's linear structure appeared to be a helpful structure for initially teaching the skills. The linear structure was also appropriate for the design of supported self-study material.

1.16 The first Study Pack I produced took the form of a booklet which led the pupils through the nine steps of the library research process defined by Irving (see Appendix A). The pack was designed so that pupils could work through a piece of library research on a subject of their own choice, with tutorial groups and tutorial sessions as support. However, a Pilot Study showed that the amount of text the pupils had to read distracted them from the learning of library research skills.

1.17 The Education Department of Western Australia (1985), working independently of Irving, produced a Study Pack for secondary school teachers which broke down "The Enquiry Process" into the same structure as Irving, but presented eight stages. It produced a video and pack for use by

the classroom teacher to lead each member of the class through the same piece of library research, the subject of which would be defined by the teacher. This approach did not seem to provide appropriate opportunities for pupils to actively engage in their learning, nor to engage in metacognition. However, the pack did present what I considered to be a useful idea, eight "Study Support Cards", each summarising a stage of the research process, which were available as aide memoirs for the pupils.

1.18 Although the analyses of Irving and the Education Department of Western Australia were very similar, I felt that Irving's examination of each stage of the process was more lucid and more helpful to the classroom teacher. However, the Education Department's "Study Support Cards" appeared to be a very successful way of summarising the stages in a way that would be helpful to pupils. Consequently, I combined Irving's analysis of the research process with the concept of "Study Support Cards" to design a second supported self-study pack (see Appendix B). In this pack Irving's stages were explained very simply, one on each card, with a worked example of each stage on each card. The pack, in common with the first pack, was designed so that pupils could work through a piece of library research into a subject of their own choice, with tutorial groups and tutorial sessions as support. I produced a "Teacher's Guide" to this "Study Pack" in the hope that other teachers in our English Department might find it useful. In a limited trial, and during the main part of the research programme, this Study Pack was shown to be more successful in helping pupils to learn library research skills.

Summary.

1.19 At this stage I had:

- (a) identified a higher order skill which was potentially a transferable skill;
- (b) identified metacognition as one condition which was probably important for transfer;
- (c) chosen supported self-study as an appropriate method of learning to engage pupils in metacognition;
- (d) produced a Study Pack.

1.20 It was clear from my reading of the relevant research literature into transfer that most research into transfer had been conducted with university students. However, the National Curriculum defined the transfer of library research skills as something essential for much younger pupils. I chose to explore the transfer of library research skills with a mixed ability class of 14 year old pupils. An analysis of the curriculum these pupils had followed suggested that the research skills they had been taught were restricted to information retrieval and not the higher order skills Irving had defined so it would be possible for me to explore how far their research skills were improved by using the Study Pack. Also, the same class was taught RE together and their RE teacher agreed to set an assignment that could be used as a transfer task. In this task the pupils would be given opportunities to carry out library research. It would then be possible to investigate how far pupils transferred skills they had learned by using the Study Pack. Finally, it would be necessary to explore

conditions which may promote or inhibit transfer.

1.21 After careful consideration of a range of research paradigms I chose to carry out this research programme within the action research paradigm as I considered it to be the most appropriate research paradigm for classroom enquiries.

1.22 This chapter has put the concept of transfer of learning in context and has described the process through which I defined my own research project. Chapter Two explores in detail the relevant concepts of transfer, metacognition, library research skills and supported self-study. Chapter Three considers practical and philosophical reasons why action research is an appropriate paradigm within which to carry out classroom research. Chapter Four provides an account of the research programme itself. Chapters Five and Six provide a very thorough consideration of the results of the research.

Chapter Two.

A Review of the Literature on Four Central Concepts:
Transfer; Metacognition; Library Research Skills;
Supported Self-Study.

Chapter Two: A Review of the Literature on Four Central Concepts: Transfer; Metacognition; Library Research Skills; Supported Self-Study.

Introduction.

2.1.1 This chapter considers the concepts central to the research programme: transfer; metacognition; library research skills; and supported self-study. The research literature is considered in four sections, in which the following arguments are developed:

(a) The research literature which considers the transfer of learning has found evidence of transfer to be elusive. However, there is a small body of research that suggests that there are learning conditions which may promote subsequent transfer of learning;

(b) While many conditions appear to influence the transfer of learning the most significant influence appears to be metacognition;

(c) Library research skills have been defined by the NCC as transferable skills, although correspondence considered in paragraph 2.3.4 raises questions about the NCC's understanding of the problems associated with the transfer of learning. However, as library research skills have been shown to be relevant across the curriculum, research is required to identify learning conditions which may promote the transfer of these skills;

(d) Supported self-study appears to offer learning conditions which may promote the transfer of library research skills.

Section One: Transfer of Learning.

2.1.2 That learning can be transferred from one area of the curriculum to another is a common sense notion implicit in education. However, there is a body of research which suggests that although transfer of learning is desirable it does not often occur. The research literature has identified a variety of reasons for this failure. It can be seen that over the last two decades three attempts have been made to address this failure of pupils to transfer learning: the study skills movement; the definition of transferable skills; and the exploration of cognitive psychologists into the way we learn. It is the contention of this section that cognitive psychologists have offered the most helpful contribution to this debate.

Evidence That Transfer is Elusive.

2.1.3 Thorndike and Woodworth (1901) offered the theory that transfer of learning would only occur if different situations had identical or common elements. This theory is referred to as the identical elements theory of transfer. It seems that researchers have been unable to develop transfer theory substantially over the subsequent ninety years except to conclude that transfer is even more elusive than Thorndike and Woodworth imagined. For example, Gick and Holyoak (1980) carried out research into the solving of analogous problems. Two groups of subjects were asked to read three problem stories and were told that the purpose was to carry out a memory recall task. The groups were then given a problem to solve which was analogous to the second of the three problems stories they had already studied. One of the groups was given the hint that the stories they had

read would provide a hint for the solution. Gick and Holyoak found that the group which was not given the hint was not successful in employing an analogy, while the group which was given the hint was successful. The depressing conclusion, supported by an experiment by Crisafi and Brown (1986), is that learners are not very good at identifying when previously learned strategies are appropriate unless they are given a hint. The USAF have similarly found that in order to simplify flight simulators, cues or visual hints need to be built into the training which will later provide the stimulus for pilots to transfer their learned skill within an actual cockpit (Cormier, 1984).

The Transfer of Study Skills.

2.1.4 The study skills movement has been an attempt to address the issue of the transfer of skills. The writers of study skills manuals have identified what they feel are general skills which are not subject specific, but in their view are relevant across the curriculum. Initially, interest was in skills such as memory improvement, note-taking and speed reading (see for example: Bjernum, 1971; Buzan, 1974; Hamblin, 1981). Ambitious claims were made about these general skills, and typical of these is Buzan's claim that his "organic study method" would "enable you to study a subject ranging from English to Higher Mathematics" (1974:9). Because the skills identified as study skills have been defined as general skills which do not apply to any one specific curriculum area much of the teaching of them has taken place in the pastoral curriculum. It was felt that the skills had been clearly defined and once learned as part of the pastoral curriculum would be transferred to all curriculum areas whenever appropriate.

2.1.5 Two interesting developments took place in the 1980s. Gibbs (1981) argued that there was no evidence that this conventional teaching of study skills to university students was effective. He proposed a conventional list of study skills which included note-taking, reading, and writing, but suggested that sessions should be organised so that pupils could question their existing practice and share successful strategies with each other. In this way teachers would not impose their own strategies on the pupils, but pupils would develop strategies appropriate to their own needs. Hamblin (1983) also concluded that students were not automatically transferring their learning from study skills sessions to other learning and proposed a more radical move. Instead of the conventional list of study skills he proposed skills such as "cognitive styles or a typical way of thinking which is largely independent of the context of the subject" and "the fostering of originality and the independence of thought" (p.137). However, he did not go on to clearly define what he meant by these skills, nor how they could be learned.

2.1.6 These developments by Gibbs and Hamblin had potentially taken study skills significantly forward. Both of the authors had identified that study skills could not be simplistically defined and then taught to students who would automatically transfer them when appropriate. They were also aware that different students had different learning demands and so it was not possible to define a clear set of study skills which would be relevant to all pupils. These developments have a great deal in common with those made by cognitive psychologists who encourage students' engagement in metacognition (see paragraph 2.2.10 below). However, Gibbs and Hamblin still felt that it was possible to develop study skills in sessions which

were divorced from the academic curriculum. They seemed to argue that the reason study skills had not been successfully transferred in the past was because the skills had been poorly defined and had been taught in a conventional didactic manner; consequently the students had not been able to reflect on their own learning.

2.1.7 An appraisal of study skills teaching in fifty seven secondary schools (Tabberer and Allman, 1983) found that Buzan's (1974) "Use Your Head" was the most widely used model, which presented study skills not as ways of helping students learn more effectively but as techniques to improve examination performance. They also concluded that there was no transfer of study skills from the pastoral curriculum, where they were largely taught, to the academic curriculum. It appears that a similar review is now needed to see whether Gibbs' and Hamblin's most recent views have been more widely adopted and if so whether this has been more successful in encouraging students to transfer study skills.

Defining Transferable Skills.

2.1.8 Another development that has addressed the issue of the transfer of skills has been the attempt to define transferable skills. This issue was considered in Chapter One (paras. 1-17) where it was seen that the FEU and the NCC promoted the concept of transferable skills. The NCC went so far as to define communication skills, numeracy skills, problem solving skills, personal and social skills, and information and technology skills as transferable skills. The CNA (1991) has also addressed the issue and has defined what it considers to be "transferable intellectual skills"(p.8)

such as communication, rational argument, and application of what has been learnt. Although these moves have been made to define transferable skills neither of the institutions has explained on what basis these particular skills have been identified as transferable skills. Neither is it clear how this identification of transferable skills will actually promote transfer as none of the bodies has advised how teachers can teach for transfer. Two issues deserve further consideration.

2.1.9 (a) Common sense suggests that those skills identified by the NCC and the CNAAs as transferable skills are skills which are used across the curriculum. However, little attempt has been made to define what is understood by each of the skills. It appears that both national bodies have made the assumption that there is a generally agreed understanding of what each of these skills are. However, it is possible that different subject specialists understand these terms to refer to different skills. For example, a drama teacher and a physics teacher may not be able to agree what "communication skills" are. If in fact different subject specialists understand these terms to refer to different skills then transfer cannot occur. If the concept of transferable skills is to offer anything to education then much clearer definitions need to be offered so that it can be seen whether these definitions are shared across subject boundaries.

2.1.10 (b) Neither the NCC nor the CNAAs discuss what learning conditions may enhance transfer. They appear to share a simplistic notion that once transferable skills have been identified then they can be taught to pupils who will automatically transfer them whenever appropriate. However, it has been seen in the research literature that transfer is elusive (see para.

2.2.2). It seems that if transferable skills can be identified then much more consideration needs to be given to how these transferable skills should be taught to promote their transfer.

Cognitive Psychologists and Transfer.

2.1.11 The influence of Thorndike and Woodworth's (1901) identical elements of transfer theory can be seen in more recent research into the transfer of mnemonics (see, for example, Presley, 1986; Sugden, 1987) where claims are made that transfer has taken place if pupils use mnemonics to solve problems which are almost identical to the conditions in which the mnemonic was taught. Much of the research into identical elements transfer has explored the learning and transfer of lower order skills and the findings have very limited application. Transfer appears to be defined as the use of a lower order skill on a problem very similar in nature to the conditions in which the lower order skill has been taught. Because the transfer situation is so similar to the conditions in which the skill was learned it has been referred to as "transenvironmental programming" (Anderson-Inman: 1986) to emphasise that the transfer appears to be across physical space rather than dissimilar problems. This view of transfer focuses on what students learn and only goes as far as to consider whether pupils use their learning in similar appropriate circumstances. The research does not go so far as to consider learning conditions which may promote the transfer of learned skills.

2.1.12 A more expansive view of transfer has been taken by cognitive psychologists who have shifted the focus of attention from what is learned

by students to how students learn (Voss,1987). Thus, interest has shifted from research which wished to demonstrate that it was possible to teach pupils to transfer skills, towards research that has explored the reasons why different students have different levels of success transferring their learning. Two pieces of research can be considered to illustrate this shift of focus.

2.1.13 Borkowski (1976) wished to identify factors which would enhance transfer. He taught three groups of seven year old children to use the prepositional relationship between pairs of objects to help the children to remember the associations between the objects (eg. the box under the table). One group looked at the pairs of objects and had the prepositions provided by the researcher. Another group was told the prepositional relationship between the objects but was asked to physically place the objects into their relationships. A control group looked at the objects which were linked by the researcher with the conjunction "and". In a transfer task to see how well the pupils could learn given relationships between new pairs of objects Borkowski found that the students who had physically handled the objects while learning the skill of using prepositional relationships were most likely to transfer the skill. He generalised from his research findings that students were more likely to transfer a learned skill if (a) they had been actively involved in the learning of the skill, and (b) they were told while learning the skill that the skill would help them learn in different situations.

2.1.14 Wang (1985) explored whether pupils could be taught self-monitoring skills, and if so what effect it would have on the transfer of a learned

strategy for remembering pairs of nouns. He taught self-monitoring skills to an experimental group of thirty six year old children through games such as asking the children to draw circles both freehand and by drawing around a biscuit cutter. To encourage self-monitoring during these games the pupils were asked questions such as "If you had to play this game in the future which way would you choose?" The control group played the games but was not asked any questions. In the next stage all of the pupils were taught two strategies to remember pairs of words, previous research having shown one of the strategies to be effective and the other ineffective. The first "ineffective" method was to repeat the pairs five times. The second "effective" method required the pupils to put the pairs of nouns into sentences they themselves generated. The transfer task was a different group of eight pairs of nouns to remember. Wang found that in the transfer task significantly more children from the original experimental group chose the effective strategy compared to the pupils in the control group. He concluded that (a) it was possible to teach six year old children self-monitoring skills, and (b) pupils with self-monitoring skills were more able to select an effective strategy in a transfer task.

2.1.15 It can be seen from these two pieces of research that although the researchers adopted what was essentially an experimental model of enquiry, as used in the research into mnemonics, their interest was focused on conditions which may help pupils to transfer skills. The researchers looked for conditions from which generalisations could be made which may apply to the learning of other skills. This view of transfer has moved on from the identical elements view of transfer because the researchers have found conditions which could be applied to the learning of many skills which

could promote transfer in many different situations.

2.1.16 The research by Borkowski and Wang has been offered as representative of a body of research which has promoted the following views about transfer:

(a) Conditions can be identified that if operationalised during the learning of a skill will promote the potential transfer of that skill.

(b) It is desirable to achieve transfer of skills to problems which are dissimilar to the conditions used to teach the skills.

Although this research has made some contribution towards an understanding of transfer, more research into its findings is required. For example, it is not possible to make a clear distinction between problems which have common elements and problems which are dissimilar. It seems that there is a continuum along which all problems exist with problems having degrees of commonality. Also, while it may be possible to observe when transfer has occurred under experimental conditions it is more difficult to observe transfer of learning in the classroom. Voss (1986) has argued, for example, that while research has focused on the transfer of specific skills, it is more helpful in the classroom context to view all learning as transfer as learners make sense of new learning by transferring existing knowledge or skills to the new learning. This all encompassing view of transfer suggests that far more research into transfer needs to take place in the classroom rather than experimental laboratories. (An example of classroom based research is considered in paragraph 2.2.23 below).

2.1.17 The research literature on transfer has also failed to adequately address the issue of inappropriate transfer. That is, "when one has not transferred when one should have, or when one has transferred and should not have" (Pea, 1987:646). Pea gives as an example of inappropriate transfer a child generalising that all wet cloths are towels. The child has identified common elements between cloths, but adults would consider this generalisation inappropriate transfer. Pea further argues that the appropriateness of transfer is culturally defined, that culture dictates to a large extent what is considered to be appropriate or inappropriate transfer. For example, the school culture defines what view of library research skills it considers the pupils should be given and defines whether the skills have been transferred appropriately. However, it seems possible that even within a single culture pupils can be given conflicting messages about library research skills if different curriculum areas define them in different ways. In this context, inappropriate transfer would be seen to occur if pupils operated within a definition of library research skills they had learnt in one curriculum area in another curriculum area which had a different definition. A concrete example can be seen in the different expectations English and Science teachers have of note-taking in the school where the author's research programme was conducted. While English teachers expected notes to be taken in the pupils' own words, science teachers expected notes to be direct copying from texts so that the facts were definitely retained. Consequently, teachers in different curriculum areas would be unlikely to agree when judging a pupil's note-taking whether appropriate or inappropriate transfer had occurred.

2.1.18 One significance of the view that appropriate transfer is culturally

defined is that while research has tended to focus on the intellectual readiness of children to transfer their learning, more attention needs to be given to the ways learners interpret the messages they are given about their learning. For example, in the school context this could refer to the way pupils interpret knowledge and skills to be task specific. In order to make pupils more aware that knowledge and skills are not task specific but are potentially transferable pupils need to be encouraged to think of different applications for the knowledge and skills they acquire. More attention needs to be given in schools to creating "cultures of transfer thinking" (Pea,1987:655).

2.1.19 From this consideration of the research literature which has explored the transfer of learning it is possible to arrive at a definition of transfer as:

the appropriate transfer of knowledge or skills to a problem which is dissimilar in nature to the conditions in which the knowledge or skills were originally learnt.

It is now possible to explore learning conditions which may promote transfer.

How Can Teachers Teach For Transfer?

2.1.20 Although the research literature illustrates that the transfer of learning is elusive, a small body of research has emerged that has moved towards identifying conditions which may promote transfer. However, the authors of this research warn that at this stage their conclusions are tentative and more research needs to be conducted to explore how far their

findings are valid and generalisable to the classroom. The relevant research can be considered to fall into the categories of research into (a) metacognition, (b) problem-solving, and (c) the role of comprehensive knowledge. Although it is convenient to place the research into these categories to facilitate a study of its findings, it is clear that the categorisation is somewhat artificial as all of this research shares common concerns and has come to common conclusions about conditions which may promote transfer.

A. Metacognition.

2.1.21 Emerging as the most significant influence on the transfer of learning is metacognition. (Because of its significance the concept of metacognition is considered more thoroughly in paragraphs 2.2.1-2.2.19). This term refers to (a) the learners' ability to reflect on their progress while learning, and (b) the subsequent regulation of their progress as a consequence of their reflection. Learners may use metacognitive strategies which are those which enable them to reflect on their learning, and which include planning, predicting outcomes, monitoring activities such as testing, revising and rescheduling one's strategies, and also evaluating outcomes (Brown, 1983). The research literature suggests that for transfer to take place it is necessary for learners to engage in metacognition while learning new skills and while engaged in the transfer task. It is possible to see as an example of research into metacognition Brown's (1979) work which concluded that it is possible to teach eight year old children to reflect on their readiness for tests. Another example is Borkowski's (1976) study which showed that seven year old children can engage in metacognition

if they are actively involved in their learning, and that engaging in metacognition enhances transfer.

2.1.22 It seems from the research into metacognition that if learners are to be encouraged to transfer their learning they need to be engaged in activities which encourage them to plan their work, monitor their progress, react appropriately, and evaluate their learning.

B. Problem Solving.

2.1.23 Bender and Dirkes have each considered how their teaching of problem solving strategies may have identified conditions which promote transfer, and have generalised their findings to apply to other learning.

2.1.24 Bender's (1986) research has been directly influenced by Voss's (1972) and Flavell's (1979) views that the more individual learners monitor initial problem solving the more likely they will transfer what they have learned from the experience to other problem solving tasks. Bender explored how undergraduates could be encouraged to monitor their learning as they solved concept learning problems based on the relationships between arrays of objects. He concluded that the students who vocalised their thoughts as they solved the problems, as apposed to students who worked silently, were (a) more likely to solve the problems in less time and (b) were more likely to transfer their learning to subsequent problem solving.

2.1.25 Dirkes (1985) explored the ways in which learners solved mathematical problems in the hope that he could generalise conditions which

may promote transfer. He focused on forty-eight college students and the experiences of four teachers of pupils aged between five and sixteen. The students were given mathematical problems which required skills ranging from "division by three" to calculus. They worked in groups and were encouraged to discuss what they were thinking. The researchers and teachers kept logs of the ways in which problems were solved. Dirkes found that the most efficient learners were able to encode given facts, understood what needed to be accomplished, connected ideas and then integrated them. At each stage of the process of solving problems the most efficient learners were able to monitor their progress and consider more than one appropriate strategy. He concluded that "metacognition increases the degree to which students make learning and its transfer a problem solving experience" (p.23). The implication of Dirke's findings is that if teachers wish to teach for transfer then it seems that they need to encourage learners to monitor their progress and to consider alternative strategies whenever possible. This would be encouraging what Pea (1987) has referred to as "cultures of transfer thinking".

2.1.26 The conclusions arising out of the exploration of problem solving emphasise how significant the concept of metacognition is to transfer as problem solving requires reflection and appropriate response. However, the research also suggests conditions which may encourage learners to engage in metacognition. The following conditions can be offered:

- (a) vocalising while problem solving can help learners to reflect on their learning;
- (b) learners who reflect on their problem solving are more likely to

transfer their learning to subsequent problem solving.

C. The Importance of Comprehensive Knowledge.

2.1.27 Research has shown that some learners fail to transfer strategies because they do not fully appreciate that the strategies they have acquired have the potential to transfer (see for example, Cavanaugh and Borkowski, 1979). Building on this research O'Sullivan and Pressley (1984) hypothesised that if learners had a "comprehensive knowledge" of a strategy, which would include both a clear understanding of the mechanics of the strategy and its potential application, they would be more likely to transfer the strategy to appropriate situations. The researchers taught one hundred eleven year old children how to memorise pairs of words by creating images which made an association between the words. For example, to remember that the city Lockhaven was known for its paper production children may imagine a lock and piece of paper doing something together. The children were assigned to one of five groups and each group was provided with a different intensity of instruction in the strategy. O'Sullivan and Pressley concluded that there was only a significant level of transfer of the skill by the pupils who had received the most intensive instruction, and argued that this showed that young children need "comprehensive knowledge" of strategies before they can successfully transfer them.

2.1.28 Although these findings are interesting their significance is not entirely clear. The skill that O'Sullivan and Pressley have focused on is a lower order skill and the researchers themselves questioned whether their

findings would necessarily apply to the learning of more complex materials. Also, it is not clear from this experiment how intensive instruction needs to be to achieve transfer. However, it seems that O'Sullivan and Pressley have identified a condition of learning which deserves more attention in order to explore its influence on the transfer of learning.

Conclusion: Ways To Teach For Transfer.

2.1.29 Although more research is required before it will be possible to identify with confidence conditions which influence the transfer of learning, research has identified some conditions which deserve further exploration. It seems likely that transfer can be promoted by:

- (a) actively involving learners in their learning;
- (b) telling learners how their learning will help them in different circumstances;
- (c) encouraging learners to think of different applications for their learning;
- (d) encouraging learners to plan, monitor and evaluate their learning;
- (e) encouraging learners to vocalise their thoughts while engaged in learning;
- (f) encouraging learners to consider alternative strategies to solve learning problems.

2.1.30 In conclusion, it seems that the concept of metacognition subsumes all of these learning conditions as they are all strategies which encourage learners to reflect on what they are doing and modify their learning

accordingly. It is encouraging that Brown (1984) suggests that it is possible to teach even very young learners to engage in metacognition.

Metacognition and Transfer.

2.2.1 The use of the term metacognition in the research literature causes some confusion because it is used to refer to related but conceptually different issues. Flavell has been credited with using the term first, in 1971, and the concept is deeply rooted in his research into metamemory. Because the two concepts, metamemory and metacognition, are so closely related, and because the research methodologies used to explore metamemory offer so much to research into metacognition, it is valuable to explore how the concept of metacognition has been derived from research into metamemory. Through tracing this development it is possible to come to a clearer definition of metacognition.

Metamemory and the Transfer of Memory Skills.

2.2.2 In the 1970s researchers such as Flavell (1970) and Brown (1978) explored children's use of memory strategies. These studies found that children were able to use strategies such as mnemonics when instructed to but failed to choose appropriate strategies when given a memory task without instructions about which strategy to use. Because of this failure the researchers' focus turned to subjects' knowledge about their memory. Current theories argue that an understanding of the way memory operates improves subjects' performance of memory tasks. This understanding is referred to as "knowledge about memory" or "metamemory" (Flavell, 1971).

However, there is some confusion in the research literature because when researchers have used the term metamemory they have not always been clear about the nature of the knowledge to which they refer.

2.2.3 Flavell (1977) identified two types of knowledge about memory which he labelled "sensitivity" and "variables". "Sensitivity" referred to knowing that a strategy such as mnemonics could be used for some memory tasks and not others. "Variables" referred to knowing about, for example, one's own lack of ability to remember particular categories of information. Brown (1978) and Paris (1978) extended the definition of knowledge about memory to include being able to monitor one's performance during a memory task and changing strategies if necessary. The term metamemory when used in the research literature may refer to any or all of these different types of knowledge.

2.2.4 The research methodologies used to discover the extent of knowledge subjects had about memory have also caused some confusion, in part because researchers have not adequately distinguished between subjects' apparent and actual knowledge about memory. Sugden (1987) for example, taught a group of ten year old children how to use a mnemonic to remember a sequence of pictures and then tested the pupils on their ability to remember further pictures. He concluded that the pupils who performed well in the transfer test had done so because they had learnt the mnemonic. This study claimed to have illustrated that children had exhibited metamemory by being able to use a taught skill in different circumstances: that is they had some knowledge about memory. However, the study failed to go further to explore whether, for example, the children consciously used the mnemonic. It also

failed to explore the reasons why some of the children failed in the transfer test and whether those who had failed had metamemory which they did not use. In contrast, Cavanaugh and Borkowski (1980) explored the link between metamemory and memory and argued that evidence of knowledge about memory would be exhibited if, for example, a child knew that several strategies could be used in a particular task and knew why particular strategies may be needed. They tried to find evidence of this metamemory by administering a questionnaire. Hence, Cavanaugh and Borkowski took the issue of metamemory further than Sugden and they expanded the definition of knowledge about memory to include reference to articulation of that knowledge. Consequently, they did not use success in a memory task as evidence of metamemory but questioned children before they tackled the memory task about their knowledge of memory.

2.2.5 A major criticism of research into metamemory has been made by Cavanaugh and Perlmutter (1982) in a review of all the available research. They concluded that researchers had concentrated exclusively on the existence of memory knowledge and no consideration had been given to how and why children used or failed to use memory knowledge that they had. It seems that research has shown that young children can have metamemory, but the association between metamemory and performance of memory tasks cannot adequately be explored unless careful consideration is given to how and why children use or fail to use memory knowledge they have.

Metacognition and the Transfer of Metacognitive Skills.

2.2.6 Flavell's (1979) research into metamemory in young children led him to the conclusion that children had very little knowledge about cognitive phenomena and did very little monitoring of their own cognitive processes. He offered a model of cognitive monitoring in which he introduced the concepts of "metacognitive knowledge" and "metacognitive experiences".

2.2.7 By metacognitive knowledge Flavell meant the knowledge an individual may have about what variables interact to influence cognitive processes. He argued that the three most influential variables are person, task and strategy variables. Person variables are everything that the learner believes about himself as a learner. For example, a learner may believe that he finds solving mathematical problems easy but has difficulty writing essays. Task variables are all the information the learner has to help him tackle a task and which helps him predict how successful he will be in that task. For example, a learner may understand that he does not have sufficient knowledge to tackle a particular problem and this understanding will help him either (a) decide how best to manage the problem, or (b) conclude that he is not capable of tackling the problem. Strategy variables are all the knowledge a learner has about what strategies are likely to be effective in particular circumstances. This would include, for example, a learner's knowledge that for them a successful way of remembering information is to highlight the main points of the information and repeat them over and over again.

2.2.8 A learner's metacognitive knowledge can help him to select the right

strategies to achieve goals, or to abandon inappropriate strategies. These decisions will be made in the context of what the learner thinks he knows about himself as a learner and about the task related knowledge he has available. Flavell argues that metacognitive knowledge may be used subconsciously or activated automatically by retrieval cues in the task. However, if a learner consciously uses his metacognitive knowledge Flavell says the learner has had a metacognitive experience. That is, the learner has engaged in metacognition. Flavell argues that this conscious use of metacognitive knowledge is most likely to occur in situations which require careful, highly conscious thinking such as school tasks which require prior planning and subsequent evaluation.

2.2.9 Flavell also identifies a distinction between what he terms "cognitive strategies" and "metacognitive strategies". A cognitive strategy is a strategy a learner has which, for example, will improve his knowledge. Flavell gives as an example of a cognitive strategy the reading of a page of text with the straightforward goal of improving one's knowledge of the content. A metacognitive strategy is a strategy which allows the monitoring of cognitive progress. That is, after engaging in the cognitive strategy of reading a page of text to improve one's knowledge of the text one may ask oneself questions about the text to monitor how well one can answer them. In Flavell's words, "Cognitive strategies are invoked to make cognitive progress, metacognitive strategies to monitor it" (p.909).

2.2.10 Some confusion exists in the research literature in the distinction between metacognition and metacognitive strategies. It can even be seen

that there is confusion between metacognition and metamemory. Two examples can be used to illustrate this confusion.

2.2.11 Lawson and Fuloop (1980) tried to train two groups of less able adults in a strategy to remember series of pictures by making their own associations between the pictures. One of the two groups was involved in discussions about the transferability of the strategy, and when this group performed better in a transfer task than the group who had not been involved in discussions about the transferability of the strategy, Lawson and Fuloop concluded that this improved performance was evidence of metacognition, the "appropriate use of these strategies by subjects" (p.175). However, there was no attempt by Lawson and Fuloop to discover whether the adults had consciously used the strategy they had been taught and so in Flavell's terms the adults may have used a metacognitive strategy, but no evidence had been provided that the adults had engaged in metacognition. In fact, some researchers may argue that the use of a strategy to remember series of pictures is evidence of metamemory rather than metacognition.

2.2.12 Larson et al. (1985) focused on the transfer of metacognitive strategies by university students. They defined as a metacognitive strategy "co-operative learning" in which pairs of students interacted in a systematic way in order to learn text material. Pairs of students firstly read 500 words of a 2500 word text. One student in each pair orally summarised from memory what they had learned while the other student corrected any mistakes they felt the first student had made. The roles were reversed for the next 500 words and the process repeated until all 2500

words had been read. In this study Larson et al. defined as metacognition "self-monitoring activities such as error detection, noting failures of memory and making judgements of importance in regard to learning text material" (p.343). Although the students used these self-monitoring skills when they worked in pairs they failed to use any of them when they were subsequently asked to read and learn a piece of text on their own. Larson et al. concluded that in their study metacognition had not aided transfer. However, it seems in Flavell's terms, while Larson et al. have correctly defined "cooperative learning" as a metacognitive strategy, they have failed to identify how consciously the students had reflected on the process of self-monitoring. That is, the students may not have engaged in metacognition while working in pairs.

2.2.13 It can be seen that some researchers have confused the distinction between the use of metacognitive strategies and metacognition. There is even some confusion between metacognition and metamemory. However, there seems to be a general consensus about which strategies can be defined as metacognitive. Brown (1983), in a text edited by Flavell, has identified the following categories of strategies that are considered in the research literature to be metacognitive:

"planning strategies prior to undertaking a problem (predicting outcomes, scheduling strategies, various forms of vicarious trial and error, etc.); monitoring activities during learning (testing, revising, rescheduling one's strategies for learning); and checking outcomes (evaluating the outcome of any strategic actions against criteria of efficiency and effectiveness). (p.107)

2.2.14 It seems from the research literature that although discussions about the distinctions between metacognitive strategies and metacognition

are helpful, they may mask the fact that metacognition appears to be what Gibbs (1981) has referred to simply as "active reflection". That is, metacognitive strategies appear to be strategies which encourage learners to actively reflect on what they are learning, while to engage in metacognition is to actively reflect on what is being learnt. In terms of study skills Gibbs has argued that to accept a new strategy "will be to little avail if it is not accompanied by the student actively thinking about what he is trying to do with it when it is applied"(p.90). Inherent in this concept of active reflection is appropriate action as a consequence of the reflection. The pupils' behaviour will be influenced by their reflection. It seems that if pupils are to be encouraged to transfer their learning then they need to be encouraged to actively reflect on what they are learning, which in turn may increase the chances of them reflecting on what has been learnt when it is appropriate to transfer it.

2.2.15 Further confusion in the research literature can be seen in Flavell's theoretical distinctions between cognitive strategies which improve knowledge, and metacognitive strategies which allow the monitoring of cognitive progress. These distinctions do not appear to be as clear in practice. This can be seen by trying to define library research skills as either a cognitive strategy or a metacognitive strategy. At one level library research skills could be defined as a cognitive strategy. Pupils may simply use the research process in a mechanical way to retrieve information which would improve their knowledge. For example, a pupil may use the key-word "Romans" in the Subject Index to find a book which provides the date of the Roman Invasion of Britain. However, Brown has identified as metacognitive strategies planning activities prior to

undertaking a task, monitoring activities during learning, and the checking of outcomes. It can be seen that Stages 1-3 of the Research Process, as defined by Irving (see paragraph 1.14), are essentially planning activities while Stage 9 is essentially an evaluation of the outcome. That is, while some elements of library research skills can be defined as cognitive strategies, other elements are clearly metacognitive strategies. Moreover, in the context of this research programme, while pupils worked through the Study Pack to learn library research skills there was evidence that some pupils were able to actively reflect on their learning. This suggests that (a) library research skills are made up of a collection of both cognitive and metacognitive strategies and (b) while engaged in library research pupils can engage in varying degrees of metacognition, or not engage in metacognition at all.

Library Research Skills as Transferable Skills.

2.3.1 It has been seen (paragraph 2.1.4) that in the 1980s there was an appreciation that pupils were not successfully transferring skills that they had been taught, in Study Skills sessions, to other curriculum areas. One of the reasons given for this failure to transfer study skills was that it had not been accurately defined what was meant by Study Skills. This issue was taken up by, amongst others, Gibbs and Irving. Gibbs (1981:60) argued against those who had tried to draw up definitive lists of study skills, and said that "we do not, in general, know what the necessary study skills are, and it seems unlikely that any exist." Irving (1981) identified the same problem but in an attempt to address it she focused on a subset of study skills and argued that a general definition of study skills could be "those skills which are associated with the acquisition and use of information in the pursuit of knowledge"(p.3). This view represents a shift in perspective as it ignores many of the skills traditionally considered to be study skills, such as speed reading, memory work and preparation for examinations, and focuses on a specific set of related skills. She defined what she considered to be study skills as:

formulating and analysing the range and nature of information to be gathered;

identifying and appraising the most likely sources;

tracing and finding them;

examining, selecting and rejecting what is found;
using and interrogating resources;
making notes or otherwise recording any information found;
interpreting, analysing, synthesising and evaluating it;
presenting and communicating it in an orderly way;
evaluating personal performance to improve future efficiency.

2.3.2 Gibbs (1981) had argued against the generation of definitive lists of study skills in part because he felt that the lists were not focusing on skills which were so general that they would be transferred. In contrast Irving (1981) identified what she considered were generalisable skills. She had strong grounds for focusing on these particular skills as generalisable study skills as she had analysed a wide range of assignments set in secondary schools and concluded that all information processing assignments required some or all of the skills she labelled as study skills. Irving (1985) later presented these skills as the nine steps of the research process.

2.3.3 It can be seen that Irving had been able to move logically to a position where study skills are defined as what would otherwise be referred to as library research skills. It can also be seen that she had grounds to argue that these skills were generalisable skills that were required across the curriculum. The NCC (1990) appears to have been influenced by these arguments and has itself defined study skills in terms of retrieving, analysing, interpreting and evaluating information. It has similarly identified these skills as cross curricular skills. In fact, aspects of the research process as defined by Irving can be found to a lesser or greater

extent in National Curriculum Attainment Targets and Programmes of Study for all of the following subjects: English, Mathematics, Science, Technology, History and Geography. For example, the History Programme of Study requires pupils to be given opportunities to:

"ask questions; choose sources for an investigation; collect and record information; select and organise historical information; present results orally, visually and in writing.." (p.17)

Similarly, the Geography Programme of Study says that:

"Pupils should undertake an individual or small group investigation into a geographical topic in the form of a problem-solving exercise. They should support their enquiry with fieldwork and the use of secondary sources." (p.47)

2.3.4 Because the NCC's statements about study skills as library research skills so closely reflect the work conducted by Irving it may be suspected that the NCC consulted the available research literature when it considered these issues. In contrast, however, the NCC's claim that library research skills are "transferable, chiefly independent of content"(ibid:3) does not seem to be based on available research literature. It has been seen (paragraph 2.1.3) that evidence of transfer is elusive. The NCC's lack of understanding about the problems of transfer is suggested by the absence in their publications of any advice about learning conditions which may promote transfer. It is also suggested in correspondence between Dennis Fox, Principal Lecturer in Education at Nottingham Trent University, and Jenny Hall, Assistant Chief Executive at the NCC (Appendix C). When asked by Dennis Fox to "give me some indication of the evidence on which this assertion of transferability is based" (1.12.90) Jenny Hall replied,

"Council is currently undertaking further work on definition and transferability of skills across the 5-19 curriculum. NCC has, however, not yet issued any further statement" (15.1.91). NCC publications, and the reported correspondence, suggest that while the NCC has justifiably referred to library research skills as cross curricular skills it has taken for granted the transferability of library research skills without being aware of the problems associated with transfer and without giving any consideration to the problems of teaching for transfer.

2.3.5 Library research skills have been identified as generalisable skills which are required across the curriculum. Now research is required which will explore whether there are conditions which will promote the subsequent transfer of learned library research skills. It has been seen that there is a body of research which suggests that if pupils engage in metacognition, or active reflection, while learning new skills they are more likely to transfer these skills when it is appropriate. Supported self-study seems to offer learning conditions which encourage this active reflection.

Section Four: Supported Self-Study and Transfer.

2.4.1 Supported self-study has a great deal in common with resource based learning, independent learning and Open Learning. Proponents of all of these methods of learning would claim that they are "more active forms of learning" (Waterhouse,1988) in which the work is adapted to the individual learner and the learners are more responsible for their learning. Supported self-study can be identified by its emphasis on the management of the learning experience and the importance it places on tutorial support. Waterhouse (1983b:1) argues that there are:

"...three essentials of supported self-study; three different kinds of support:

Resources	specially chosen to support the independent learner
Tutoring	provided regularly and usually organised in small groups
Management	designed to provide a disciplined framework."

2.4.2 The resources associated with the many supported self-study projects set up around the country in the 1980s are typically structured text, like that produced by the National Extension College and the Open University, with support materials. Pupils work through the materials at their own pace, with varying degrees of personal choice. As an example of the varying degrees of choice, the materials used in a GCSE Biology course at Bilborough Sixth Form College (NCC,1988) prescribed five activities which led the pupils to a choice about activity six, while a GCSE Mode Three Home Economics course at Emesford Grange (City of Coventry,1989) offered even

more choice, allowing the pupils to choose their own topics for study.

2.4.3 Central to supported self-study is the tutorial and it is this which advocates argue distinguishes supported self-study from other forms of independent study (NCET,1989). It is argued that the tutorial helps supported self-study go beyond the acquisition of knowledge or skills, and allows the pupils to focus on learning how to learn. "It approaches this, not through 'lessons' on how to learn but through experience and practice. It is concerned with the application of study skills in real learning situations" (Waterhouse,1988:44). During programmes of supported self-study tutorials should be held at regular intervals and each tutorial should have the following agenda:

1. It should review the work the pupils have done since the last tutorial.
2. It should assess the work.
3. It should define objectives for the next phase of work.

2.4.4 It seems that the strength of the tutorial is that it allows the teacher to deal with problems encountered by the pupils and to monitor the pupils' progress while allowing the pupils the freedom to work at their own pace and on areas of study defined to some extent by themselves. At best the tutorial provides "a time when the teacher can listen rather than teach, a time when a real dialogue between tutor and student can take place" (Rainbow,1987:62). It is during this contact between the teacher and small groups of pupils that the teacher has the opportunity to encourage the pupils to actively reflect on what they are doing. The group discussion inherent in tutorials may also provide opportunities for pupils to actively

reflect on issues raised by other members of the tutorial group.

2.4.5 It is possible to reflect on the value of the tutorial by considering an independent learning programme used in higher education to introduce library research skills (de Silva, 1987). Forty-nine first year B.Ed. students were provided with self-study materials which were designed to make them aware of the resources available in the library, to enable them to retrieve resources, and to make them confident users of the library. The students were also provided with tutorial support during their period of self-study but this support was only provided on demand. de Silva's evaluation of the project provides some interesting observations. Many of the students valued the programme, and students were able to successfully complete the activities set as part of the programme. However, the biggest weakness in the programme was identified as the quality of tutorial support. Because tutorials were not formally built into the programme but only provided on demand the library staff were often too busy to provide appropriate help. Also, de Silva felt that the staff did not have the skills and techniques for providing tutorial help although he did not define what these skills and techniques were. The quality of the tutorial support was identified as the main reason why only half of the group completed the programme.

2.4.6 It cannot be argued that supported self-study is the only way to offer learning conditions which encourage pupils to actively reflect on their learning. Neither can it be argued that supported self-study offers learning conditions which are unique to itself. However, it seems that supported self-study offers the following combination of conditions which

may encourage pupils to engage in active reflection which in turn may promote transfer of learned knowledge or skills:

- (a) pupils are able to have some choice about what learning they are engaged in;
- (b) pupils can work in groups;
- (c) pupils can work at a pace appropriate to themselves;
- (d) tutorials can help to focus the pupils' attention on their learning.

Conclusion.

2.5.1 This chapter has shown that researchers have found evidence of the transfer of learning to be elusive. However, a body of research suggests that if pupils engage in metacognition, or active reflection, while learning new skills they are more likely to transfer those skills when appropriate. Library research skills have been defined as generalisable skills that are relevant across the curriculum and it has been argued that research is required to explore conditions which may encouraged learners to transfer library research skills they learn in one curriculum area to other curriculum areas when appropriate. Supported self-study seems to offer the learning conditions which may encourage learners to actively reflect on their acquisition of library research skills, and consequently may promote subsequent transfer.

Chapter Three.

Methodology: The Action Research Paradigm - a Justification
for Practitioner Research.

Chapter Three: Methodology: The Action Research Paradigm - a Justification for Practitioner Research.

Introduction.

3.1.1 In this chapter I wish to argue that "action research" is a more appropriate research paradigm than the positivist paradigm for teachers who wish to research their own practices in their own classrooms. I wish to argue that action research can offer the means by which teachers can (a) improve the quality of their pupils' educational experience, and (b) achieve professional development, individual autonomy and emancipation. To develop these arguments it is necessary to offer a rationale and then address criticisms that have been made of action research methodology. While action research is not universally accepted as a valid form of educational research, there is a body of literature which argues that action research can be shown to offer a rigorous methodology for classroom research. It is possible to see, however, some conflict between the concept of teacher as action researcher and the role of the academic researcher who wishes to promote action research by teachers. While there is a discernable movement towards empowering individual teachers to research their own experiences, there is some disagreement amongst academic action researchers about the status of teacher research and about when teachers' reflections about their experiences can actually be defined as "research". Finally, I wish to show how this research programme can be considered to be an example of teacher action research.

Section One: Defining Action Research.

3.1.2 The academics who are currently active in the field of action research do not seem to have a shared definition of what action research is. It is helpful to consider three prominent definitions of action research taken from the literature and to draw out from them what they have in common.

- A. "Action research is a form of self-reflective enquiry undertaken by participants in social (including educational) situations in order to improve the rationality and justice of (a) their own social or educational practice, (b) their understanding of these practices, and (c) the situations in which the practices are carried out."
(Carr and Kemmis, 1983:152).
- B. "...it is about the systematic study of attempts to change and improve educational practice by groups of participants by means of their own practical actions and by means of their own reflection upon the effects of those actions."
(Ebbutt.D, in Burgess(Ed)1985:156).
- C. "Action-research might be defined as 'the study of a social situation with a view to improving the quality of action within it.' It aims to feed practical judgement in concrete situations, and the validity of the 'theories' or hypotheses it generates depends not so much on 'scientific' tests of truth, as on their usefulness in helping people to act more intelligently and skilfully. In action-research 'theories' are not validated independently and then applied to practice. They are validated through practice."
(Elliot.J, 1991:69).

3.1.3 From these various definitions it is possible to see that action research, when practised in schools, is a systematic form of self-reflection carried out by teachers themselves in order to improve their own practice. Its validity is judged by the improvements the teachers are able to make in their educational practice and by its relevance to other

circumstances as perceived by other teachers. This view has evolved in the United Kingdom over the last twenty years as a result of some key curriculum development projects: the Humanities Curriculum Project, the Ford Teaching Project, and the Teacher-Student Interaction and Quality of Learning Project. Each of these projects is now considered so that it is possible to see how the present status of action research has evolved.

The Humanities Curriculum Project.

3.1.4 Stenhouse (1975) initiated a shift in educational research thinking when he developed the concept of "the teacher as researcher" and argued that through classroom research teachers could achieve extended professional development. Educational research had traditionally been carried out within the positivist paradigm with the focus on curriculum product. His view was that all teachers should engage in systematic self-study which would lead to improvements in their own practice. He argued that data could be collected in the classroom through video, photographs, audio tape recordings, and the pupils' perceptions, and should focus on the processes of teaching.

3.1.5 However, while Stenhouse argued that teachers could achieve "autonomous" professional self-development through their classroom research he did not seem to be absolutely clear about the status of this classroom research. For example, while he felt that teachers should engage in research into their own classrooms, he felt that "the best way forward is probably through a mutually supportive co-operative research in which teachers and full-time research teams work together" on curriculum research

and development projects. This view appears to suggest that while the teachers' role in the research project was valued, in fact curriculum development should be proposed by outside agencies, not generated by teachers, and the systematic self-study by teachers was actually designed to facilitate the implementation of that policy.

3.1.6 More doubt about the status of teacher classroom research can be seen when Stenhouse considered the generalisability of classroom research. He argued that as the purpose of classroom based research was for teachers to improve their understanding of their own practice it was not necessary for classroom research to generalise theory for others. Any theory generated by an individual teacher would be "simply a systematic structuring of his understanding of his work". In this context research would entail "the development of a sensitive and self-critical subjective perspective" and would not aspire towards an "unattainable objectivity". However, Stenhouse proposed the accumulation of a body of case-studies from which professional researchers, not teachers, could develop general propositional theory. Again, the suggestion is made that while teachers may carry out research in their own classrooms they would be incapable of developing general propositional theory themselves but would require the expertise of professional researchers. Hence, there appeared, in Stenhouse's writing, to be two tiers of research, classroom research and professional research, with only the latter having any public status.

3.1.7 The strengths and weaknesses of this concept of the teacher as researcher can be seen in the Humanities Curriculum Project (HCP) which was directed by Stenhouse between 1967 and 1972. This project was designed to

reform the humanities curriculum and began from Stenhouse's view that the humanities should help pupils to develop an understanding of social situations and controversial issues. To explore this aim the HCP provided teachers with materials which could be used to lead discussions on issues such as "The Family". "War and Society" and "Poverty". The project then focused on the strategies individual teachers used to encourage discussion-based enquiry into the issues. The project did not prescribe aims and objectives but defined principles which guided the teaching: teachers should act as chairpersons of the discussion and should not use their position of authority to promote their own views; a divergence of views should be respected. The teachers' role in the project was to develop pedagogical strategies for achieving these aims in their classrooms. Stenhouse believed that while it was possible to generalise strategies from past experiences it was not appropriate to prescribe strategies as rules. Generalised strategies could be offered to teachers as hypotheses to be tested in their own classrooms but because such strategies were highly context dependent they could not be prescribed. This project reflected a significant shift in curriculum thinking as Stenhouse was offering a process model of the curriculum, in contrast to the traditional product model of the curriculum.

3.1.8 The central figures in this research project were the teachers whose task it was to define the pedagogical strategies by which the principles of the project could be achieved. The professional researchers' role was initially to provide the materials, observe the teachers and help to develop general propositional theory. However, early in the project there was a shift of focus for the professional researchers because of tensions

between the "outside" researchers and the "inside" researchers (Elliott,1991). The teachers appeared to have difficulty with the shift in curriculum model and their feedback to the professional researchers tended to focus on the quality of the materials provided rather than the strategies they used to guide discussion. The professional researchers had the task of "fostering the development of teachers' capacities for self-reflection"(p.19). Stenhouse hoped that teachers would improve their strategies as a consequence of their self-reflection. Elliott has argued however, that as the professional researchers were using the feedback from the teachers to generate theories which were then fed back to the teachers, "teachers' thinking was intentionally (but not necessarily consciously) structured by the outsiders' conceptions of the pedagogical process"(p.21).

3.1.9 The success of the Humanities Curriculum Project was that Stenhouse offered a process model of curriculum development in which the focus of attention was improvements in the quality of teaching rather than in the quality of the content. Within this process model of curriculum development it was realised that the concept of teacher as researcher was essential if the quality of teaching was to be improved. However, while the project implemented a shift in thinking by valuing the teacher as researcher, Elliott has argued that the structure of the project allowed the professional researchers too much control over what the teacher-researchers reflected on.

The Ford Teaching Project.

3.1.10 The Ford Teaching Project, directed by Elliott and Adelman, engaged forty teachers in action research to explore the difficulties faced when implementing enquiry/discovery learning in their classrooms. The two directors built on their experiences of the Humanities Curriculum Project and built into the design of the Ford Project a desire to engage the teachers even more effectively in the generation of theory. To achieve this aim the Ford Project worked within the following three principles:

"The project was designed as teacher-based action research and not simply as teachers' research. The term 'action research' indicated a clarification of the research paradigm involved, and the relationship between research and teaching. They were not conceived as two separate activities. Teaching was viewed as a form of educational research and the latter as a form of teaching. In other words the two activities were integrated conceptually into a reflective and reflexive practice.

Teachers were to generate as well as test diagnostic and practical hypotheses.

Teachers were expected to develop pedagogical theory as well as explore how to realise it in practice."

(Elliott, 1991:30).

3.1.11 These principles clearly reflected a shift in the status of the teacher as researcher. Stenhouse had seen educational research in terms of collaboration between professional researchers and teacher researchers, with the professional researchers developing the theory. The Ford Project saw the role of the professional researcher as that of facilitating self-reflection by the teacher researchers and enabling the generation of theory by the teacher researchers. Another interesting shift in thinking lay in the idea that "Teaching was viewed as a form of educational research and

the latter as a form of teaching". This integration of teaching and action research suggests that Elliott did not view action research as a way for professional researchers to implement curriculum development, but it was an integral part of a teacher's role to reflect on their own practice. That is, action research was not something initiated when curriculum development was proposed, but was an activity in which all teachers should be engaged at all times. This also represented a shift in the concept of the size of research projects. While Stenhouse saw curriculum development initiated by outsider designed projects, Elliott's view of action research suggested the possibility of small scale curriculum development initiated by individual teachers, or small groups of teachers, as well.

3.1.12 The Ford Project encouraged the teacher researchers to generate pedagogical theory themselves by more actively engaging them in all stages of the research. Teachers collected data from their own classrooms and were observed by other teachers and the professional researchers. Any observations made were triangulated, discussed with the teachers for verification, and then circulated to all of the teachers in the project. Initially, the professional researchers generated a list of hypotheses which were then offered to the teachers who considered how far the hypotheses reflected their own teaching. This represented a shift in the status of the professional researcher as in the Humanities Project the teachers were asked to test hypotheses generated by the professional researchers in their own classrooms. At a final conference of the Ford Project a group of teachers used the evidence from the case studies written by the participating teachers and drew up a list of general hypotheses about the problems the teachers had experienced while implementing

enquiry/discovery learning in their classrooms.

3.1.13 Although the Ford Project ultimately involved the active support of only one third of the original number of teachers, it can be seen that the professional researchers played a more supportive and less intrusive role than the professional researchers in the Humanities Project. In both projects the professional researchers generated hypotheses from the case studies. However, in the Humanities Project the hypotheses were generated in the absence of the teachers and the teachers were asked to test the pedagogical strategies defined by the professional researchers. In contrast, "the hypothesis testing process in the Ford Project was mediated by discourse between peers rather than discourse with the central team" (ibid:33). The professional researchers in the Ford Project acted as facilitators, helping the teachers to reflect about their practices in the light of pedagogical theories the teachers themselves had generated.

The Teacher-Student Interaction and Quality of Learning Project (TIQL).

3.1.14 The TIQL Project, which was directed by Elliott and Ebbutt between January 1981 and March 1983, involved groups of teachers who identified and tried to resolve the problems they faced when teaching for understanding, and particularly focused on the extent to which teaching for assessment imposed constraints on their teaching for understanding. To ensure that the teachers took central responsibility for the action research in the project clear roles were defined for (a) the teachers, (b) the in-school co-ordinators, and (c) outside consultants.

3.1.15 (a) The Teachers' Role. The project wanted the action research "to contribute to the development of a common professional culture ie a common stock of professional insights about teaching and learning processes" (Elliott and Ebbutt, 1986:ix) on which they hoped other teachers would draw as resources for their own professional development. They explicitly wished the teachers themselves to arrive at these insights and so the project consultants tried to minimise the extent to which they contributed educational theory and left the teachers to analyse the problems and develop their own strategies to overcome the problems they identified. The external consultants resisted pressures from inspectors involved in the project to define what learning for understanding was in terms of precise learning outcomes (Elliott, 1991) and also resisted the temptation to analyse any of the data.

3.1.16 Throughout the project the teachers were responsible for defining the problems and addressing them, and ultimately the teachers were responsible for drawing together the project's conclusions. At the end of the project reports by schools, which identified the key issues and concerns, were shared at a weekend conference. Eight themes emerged from these reports and the teachers analysed the available case-studies in terms of these themes. Finally, groups of teachers considered each of the themes and generated hypotheses from the evidence of the case-studies.

3.1.17 (b) The In-school Co-ordinators' Role. The project consultants held the view that individual teachers engaged in action research did not have sufficient influence to implement change and that action research required collaboration led by in-school co-ordinators. These co-ordinators were to

provide the driving force behind the project and were to offer, where necessary, emotional support to teachers. Ebbutt (1985) has argued that "the significant organisational innovation of the TIQL project in terms of the management of educational action research was Elliott's conception of the co-ordinator's role" (p.168) which was:

- (i) to convene meetings of teachers during the project;
- (ii) to keep records of agreed plans which emerged;
- (iii) to co-ordinate negotiations between teachers and the senior staff in their schools;
- (iv) to help individual teacher researchers to share their insights and strategies;
- (v) to co-ordinate the writing of research reports.

3.1.18 It can be seen from these outlines of the roles of the teachers and co-ordinators that the TIQL project's model of collaborative action research had moved beyond even the Ford Teaching Project's success and handed over almost all the responsibility for research and the generation of conclusions to the teachers themselves. The teachers framed the initial problems, carried out action research to explore solutions, and finally drew together general hypotheses from the available case studies. It may seem from this model that the external consultants had no role to play, but they have defined their own co-ordinating role as essential to the project.

3.1.19 (c) The External Consultants' Role. During the project the external consultants consciously tried to minimise their influence over the action research (Elliott and Ebbutt, 1986) and defined their role as facilitating

the action research being carried out by the teachers. For example Ebbutt was responsible for co-ordinating the collaborative activities between the groups of teachers and he chaired meetings between the various teacher groups. The external consultants also conducted what Elliott refers to as 'second phase action research', which is research into the problems of facilitating action research being carried out by others. However, their role in the success of the project lay in two very significant areas. Firstly, the external consultants had methodological expertise that the teachers did not have, and so co-ordinators invited the consultants into schools once teachers had identified their problems and were ready to engage in action research. That is, teachers were thought to be intellectually capable of engaging in action research but they did not have the required methodological expertise. Secondly, Elliott (1991) has argued that while the in-school co-ordinators carried out their roles successfully they themselves wanted their strategies to be validated by the consultants. As the teachers required co-ordinators to motivate them, so the co-ordinators required external consultants to provide moral support.

3.1.20 The TIQL project directors had learned from their experiences with Stenhouse's Humanities Curriculum Project and Elliott's Ford Teaching Project and were able to structure the TIQL project in such a way that it was possible to give teachers major responsibility for the action research. However, it seems that the teachers required methodological expertise and external motivation to carry out systematic action research in their classrooms, and the project consultants provided that expertise and motivation.

Conclusion.

3.1.21 A consideration of these three significant curriculum development projects demonstrates how action research has developed into a research methodology which can help teachers to improve their practices. However, action research is not universally accepted as a research methodology, and even its proponents cannot agree about how it should be exploited. It is possible to identify in the research literature (a) practical reasons and (b) philosophical reasons for using action research methodology to explore educational settings rather than the positivistic paradigm.

Section Two: Practical Reasons For Using Action Research to Explore Educational Settings.

3.2.1 Classroom research has as an agreed aim the understanding of what happens in classrooms in order to improve or change the educational experience of children. However, there is no consensus amongst the research fraternity about the most appropriate methodology with which to explore the classroom. A conflict can be identified between positivist research and action research. Proponents of action research tend to define it not in its own right, but in opposition to quantitative, positivistic research. For example:

"The action researcher rejects the positivistic, instrumental, technical view of rationality, the notion that human action can be understood objectively (without taking into account the intentions, values and interests of the actors and without reference to the life of the observer and the observed) and the notion that truth is approached solely through hypothetical, deductive explanations of behaviour."

(Carr and Kemmis, 1983:160)

3.2.2 The positivist tradition can be represented as believing that a study of human behaviour can be scientific and that research can consist of empirical testing which will deduce laws which will enable the researcher to predict future behaviour. Typically, its methods would be quantitative and would include surveys, experiments, structured interviews and the analysis of official statistics. This can be contrasted with the view of action researchers that as educational research has individuals as its

subject the researcher cannot assume that research in one situation can be automatically generalised to other situations because all situations are in some way unique. Consequently, action research uses techniques which allow the researcher to explore the uniqueness of given situations, with the aim of increasing understanding of them and by so doing improve practice. Typically these methods would be qualitative and would include semi- or unstructured interviews, conversation, and the qualitative analysis of texts such as log-books, note-books and performance data. Action researchers believe that the positivist tradition is not appropriate for the exploration of individual classrooms.

3.2.3 Ultimately, this polarity of paradigms is an artificiality which at worse seems to unnecessarily isolate two different styles of research which in some circumstances borrow from each other. It can be argued, for example, that positivist researchers use qualitative methodology at the planning stages of their research (Campbell,1988) while action researchers frequently use quantitative data. It seems more helpful to argue that neither of the two research paradigms is superior, but that researchers are faced with deciding which method is most appropriate for specific research problems (Burgess;1985:3). For example, HMI (1993) has found through extensive surveys that at the age of 11 girls perform better than boys in writing and reading comprehension and that these contrasts persist at the age of 15. However, if a teacher wished to follow this up and explore ways to improve the performance of boys in his classroom it would be more appropriate to use interview, observation and pupils' performance, methods more typical of action research.

3.2.4 However, even if it is accepted that neither research paradigm is superior to the other, but that each is more appropriate for specific circumstances, action research still needs to address the criticism that its methodology does not achieve the levels of (a) objectivity, (b) validity, and (c) reliability achieved by positivist methodology. It also needs to address the criticism that because action research consciously focuses on specific instances its results have no generalisability and so action research cannot contribute to a body of educational knowledge. Each of these four criticisms are now considered to see how they are addressed by action researchers.

3.2.5 A. Objectivity. Action research is criticised because the data is acquired subjectively and so its methods are open to "gross partiality on the part of the investigator" (Parlett and Hamilton, 1972:24). However, this criticism can be seen to be not entirely fair.

3.2.6 It is possible to argue that in the context of classroom research even positivist research cannot be objective, that objectivity is an illusion (Carr and Kemmis, 1983). This is because all research is value laden and influenced by the researcher's interests. Campbell (1988:363) has criticised the positivist claims of objectivity by arguing that even "the so-called facts are themselves theory-laden". Action researchers would claim that because they have accepted the subjectivity inherent in their methodology, in a way that positivists rarely do (Walker, 1985), they are more likely to make explicit in their analysis the influences of their subjectivity and are more likely to build into their methodology checks against their subjectivity. Reflexivity, or self-awareness (Elliott, 1991),

is a principle of action research which accepts the limited objectivity of action research, but addresses it by arguing that the results of an action research enquiry

"will take the form of a dialogue between writers and readers concerning possible interpretations of experience rather than a single interpretation thrust upon a passive reader by a writer whose enquiry has resulted in certain dialectics".

(Winter, 1989:42)

3.2.7 Thus, action research makes a virtue of its subjectivity by not claiming to identify "truths" in the same way positivist research may. Action research enquiries offer possible interpretations which can be explored by readers and interpreted in the context of their own situations. However, methodological checks against subjectivity can be built into the research design and can help to persuade the reader of the degree of objectivity of an action research enquiry. Marshall and Rossman (1989:147) offer seven such checks:

- (i) a research partner or a person who plays "devil's advocate" and critically questions the researcher's analyses;
- (ii) a constant search for negative instances;
- (iii) checking and rechecking the data and purposeful testing of possible rival hypotheses;
- (iv) practising value-free note-taking, then taking two sets of notes, one with strictly objective observation and another that allows the researcher to impose some conceptual scheme or metaphor, and to be creative with the data in ways that might prove useful for more formal analysis;
- (v) devising tests to check analyses and applying the tests to the data,

asking questions of the data;

(vi) following the guidance of previous researchers to control for data quality;

(vii) conducting an audit of the data collection and analytic strategies.

3.2.8 While the practice of these controls would most likely reduce the subjectivity of action research, it can be seen that even the practice of these controls would be influenced by the subjectivity of the researcher and the research partner. Ultimately, it seems, it must be accepted that "there can be no absolute objectivity but only agreements on truth and validity shared by people who hold the same meaning system, most notably by researchers of the same methodological persuasion" (Walker, 1985:5).

3.2.9 B. Validity. Because the qualitative data gathering techniques of action research are prone to subjectivity the validity of action research findings are challenged. In defence of action research Marshall and Rossman (1989:145) have claimed that " an in-depth description showing the complexities of variables and interactions will be so embedded with data derived from the setting that it cannot help but be valid." This can be seen as either an optimistic or naive claim. More realistically, Walker (1985) has identified four aspects of validity which researchers need to consider, and which have been addressed by action researchers with varying degrees of success.

3.2.10 (a) Descriptive Validity. This refers to whether the varying descriptions of what the teacher or pupils are said to have done, say or write are authentic. This problem is most obviously evident in research

reports when the reader has to rely exclusively on the researcher's account of an event, with no other supportive data with which to judge the account's authenticity. Triangulation is widely used in action research enquiries to go some way towards resolving this issue. Claims made by a researcher are likely to be judged as valid if they can be supported by evidence from more than one source. For example, the claim in a research enquiry that a pupil was highly motivated may be supported by observation, the quality of the pupil's work and interview responses. The validity of this claim would be higher than if only one data were available to support the claim. Hence, the use of a variety of data from which claims can be drawn improves levels of validity. Hammersley (1990:99) argues in defence of triangulation as a technique to improve descriptive validity and says that "all data sources are imperfect, but in different ways, and that means that, through their combination, we may be able to counter the major validity threats."

3.2.11 (b) Concept Validity. This refers to the extent to which the concepts which are derived from the research can be authentically derived from the available data. In order to persuade readers that the concepts are valid it is incumbent on the researcher to offer the clearest definitions of his concepts, and to present as clearly as possible his data, so that readers may judge for themselves the validity of the concepts.

3.2.12 (c) Theoretical Validity. This refers to the way in which the concepts used in the research are used to generate any theory. Walker does not offer ways in which the researcher can show that his research has theoretical validity, but advises how the reader can judge the theoretical

validity of the research. The reader needs to ask, for example, "What are the relationships between concepts and how are they defined and determined? Do the relationships stand in a logical relationship to one another or are they empirically determined?" Although Walker(1985) offers these questions as ones which the reader needs to ask himself, it seems that they may offer a way forward for the researcher as well. Perhaps they are also questions which the researcher should explicitly address in his research account in order to persuade the reader of the enquiry's theoretical validity.

3.2.13 (d) External Validity. This refers to the potential the research has to generalise to other circumstances. That is, if the research findings have application in other circumstances then they are considered to have external validity. It is generally felt that action research findings do not successfully generalise to different situations. This issue is considered in more depth in paragraph 3.2.16 below.

3.2.14 The problems of research validity are not easily addressed, although it has been demonstrated that researchers can take steps to persuade readers of the authenticity of their research accounts. However, the problems of validity should not be seen to be exclusive to action research. Positivist research needs to address the same issues. Campbell (1988), for example, has argued that the generation of competing theories by positivist researchers using survey data can often be explained by differences in the researchers' understanding or use of data rather than competing theories. That is, validity cannot be expected just because the data used in an enquiry is claimed to be quantitative. Campbell goes further, by pointing out that some competing theories using survey techniques are due to the

respondents deliberately sabotaging the survey, and that qualitative research techniques could be used to explore the validity of much quantitative research.

3.2.15 C. Reliability. This refers to the extent to which the results from a research enquiry are reproducible. It is claimed that quantitative research is high in reliability while qualitative research is not. Positivists feel able to make their claims of reliability because of their belief in an "unchanging universe" (Marshall and Rossman, 1989) where hypothetical-deductive methodology uncovers truth. Hence, if an enquiry were repeated then the same results would be achieved. However, even the claim of the reliability of quantitative research can be challenged as decisions taken about implementation, the presentation of data, and the analysis of data make the replication of quantitative research equally problematic (Campbell, 1988). In the context of action research, reliability does not appear to be an appropriate concern. The action researcher assumes that the social world is always changing and only claims to be trying to make sense of one unique situation. To do this the action researcher will shift his focus and adapt his data collection methods as his understanding of the situation changes. The very nature of this flexible research design makes replication of research problematic.

3.2.16 D. Generalisability. It has already been observed, in paragraph 3.2.13, that the findings of action research enquiries cause problems for those who wish to generalise from them. The criticism is made that it is not possible to generalize from the findings because action research enquiries deliberately consider unique situations which cannot have

relevance to other unique situations. This criticism has been addressed from a number of perspectives.

3.2.17 Some action researchers would argue that the concept of generalisability is inappropriate for action research. From this perspective action research is seen as a methodology which allows individual teachers to achieve some understanding of their own classrooms in order to improve their own practices (see, for example, Bassey, 1986). Under these circumstances "theoretical abstraction is subordinate" (Elliott: 1991). This perspective views action research as essentially an emancipatory activity which empowers teachers in their own classrooms.

3.2.18 However, some action researchers who share this perspective have argued that while the central use of action research is for individual teachers to explore their own practices, individual enquiries can still offer insights for other teachers and researchers. Within this view, the responsibility for generalising from the findings falls on the reader (Walker: 1985; Marshall and Rossman: 1989). The action researcher offers his enquiry for public critique and readers judge the findings' applicability to their own circumstances. Action research is seen as a means by which teachers are able to communicate their insights to other teachers, and this may then lead other teachers to engage in similar enquiries into their own teaching and so gain their own insights (Nixon: 1981).

3.2.19 Other action researchers would go even further, and say that it is possible to generate theory from individual action research enquiries. Stenhouse (1975), for example, argued that if a body of individual

enquiries was collected, then it would be possible for professional researchers to explore the commonalities and so develop theory. Hence, theory would be gradually built up from a thorough examination of accumulated observations. Atkinson (1986) and Hammersley (1990) have gone even further. They have argued that action researchers must generalise from the available body of enquiries if their methodology is to be considered to be a genuine research methodology. In this context Atkinson contrasts the idea of action 'research' with action 'reports' when he argues that :

"if evaluators are unwilling to grapple with the formal concepts and theories, then their work is doomed to be little more than a series of one-off, self-contained reports, all of which return to 'square one', conceptually speaking."
(p.251)

3.2.20 It can be seen that there is a diversity of opinion about the potential action research has to generate theory. This diversity has arisen because there are different philosophical stances on the purpose of action research. While some researchers would argue that action research is a methodology which allows individual teachers to reflect upon their own practices, other researchers would argue that the methodology cannot be considered to be 'research' if it does not generate educational theory. The following section looks more closely at these various philosophical stances and identifies two forms of action research which are referred to as self-evaluation action research and emancipatory action research. It is argued that neither of these forms of action research is superior, but that each form is more appropriate in different circumstances. In Section Five of this chapter it is argued that this research programme can be considered to be emancipatory action research.

Section Three: Philosophical Reasons for Using Action Research to Explore Educational Settings.

Introduction.

3.3.1 In the previous section of this chapter it was argued that the eclectic methodology of action research is the most appropriate paradigm within which to carry out research in the classroom. However, there is debate amongst practitioners within this research paradigm about the ultimate purpose of action research. This section firstly considers views, presented most forcefully by Elliott, and Carr and Kemmis, that action research should be concerned with educational processes and educational values and should ultimately lead teachers to reflect on their own ethical values. Carr and Kemmis (1983) refer to this form of action research, which is collaborative in nature, as emancipatory action research and they consider it to be the most worthy form of action research. However, while many of the qualities of emancipatory action research are central to all forms of action research, commentators such as Hopkins (1985) make less ambitious claims for action research and argue that it is simply an appropriate methodology for individual teachers to reflect on and improve their practice. This section moves on to consider the views of proponents of this form of action research which has been classified by Ebbutt (1985) as self-evaluation action research. Finally, this section considers the debate being held between action researchers about the relative worthiness

of the two forms of action research.

Emancipatory Action Research.

3.3.2 In his writings about the Humanities Curriculum Project Stenhouse (1975) argued that education should allow students to come to their own understanding of human actions through discussions about controversial issues. He defined education in terms of its process rather than in terms of extrinsic outcomes and argued that education should be judged in terms of its intrinsic value as a worthwhile educational process. From this perspective, instead of focusing on objective outcomes education should be concerned with developing virtues such as curiosity, patience, tenacity, persistence, open-mindedness, intellectual courage, honesty with oneself, and humility (Elliott, 1991). That is, education should be more concerned about the manner in which students think than with the precise outcomes of that thinking. However, because teachers decide things such as the conditions of learning, what access to knowledge their students have, and the criteria by which the students' work is judged, teachers are in a powerful position to influence and manipulate the students' thinking, and it was Stenhouse's contention that teachers must avoid this. Consequently, if teachers are concerned with teaching as an ethical activity it is essential that they give careful consideration to the ethics of their own practice (Adelman, 1989).

3.3.3 Commentators have argued that action research which concerns itself with the ethical values of education is even more necessary with the advent of the Education Reform Act as the ERA has defined education in terms of

various products rather than in terms of processes, and this

"has shifted thinking away from a view of teaching as an ethical activity directed towards moral and social ends, towards a view of teaching as a technical activity conducted for utilitarian purposes such as the national interest, the economic needs of society and the demands of the labour market."
(Adelman, 1989:11)

3.3.4 It is felt that this "encroachment of technical rationality... is endangering fundamental human values" (Elliott, 1991:138). Consequently, it is seen to be essential that teachers are made aware of their own ethical practices in order that even within a product model of the curriculum it is still possible to encourage pupils to come to their own understandings of moral and social issues.

3.3.5 In order to consider the ethics of their practice Carr and Kemmis (1983:167) believe that teachers need to be made aware that their practice is influenced by "the dictates of habit, custom, precedent and bureaucratic systemisation." To be emancipated from these influences, through achieving a deeper understanding of the ethics of their practice and their own educational values, teachers need to engage in what Schon has termed reflection-in-action. Schon (1983) has argued that the professionals' taken for granted knowledge, which is implicit in their practice, needs to be made explicit through reflection, then critically examined, reformulated, and tested through further practice. In an educational context this reflective practice is said to have the potential to emancipate teachers from existing ideological conditions which may limit their capacity to offer their pupils a more rational and just education. Hence, this process of reflection allows teachers to realise that their

form of consciousness is ideologically influenced, and in the process of this realisation individual teachers are able to produce what Habermas has called a critical theory. This critical theory specifies how the individual teacher needs to modify his own practices in order to achieve what he defines as his own educational values. Action research is the term used to describe the methodology which allows teachers to engage in this reflective practice.

3.3.6 From this perspective, action research is not viewed as a form of research used to improve technical skills, but rather as a methodology for research by participants to

"improve the rationality, justice, coherence and satisfactoriness of (a) their own social practices, (b) their understanding of these practices, and (c) the institutions and programs and ultimately the society in which these practices are carried out."
(McTaggart, 1992:54).

In this sense the research carried out by teachers involved in the TIQL Project was emancipatory action research. The research began from the premiss that there were tensions between the teachers' educational aims of teaching for understanding while also working within the constraints of an examination system. By collaboratively reflecting on their practice the teachers came to clearer understandings of these tensions, "raised issues concerning the nature of schools as agents of public policy" (Elliott, 1986:41) and in so doing were more able to deal with these tensions. This research reflected Carr and Kemmis' (1983) view that action research should be seen as a methodology

"allowing participants to influence, if not determine, the conditions of their own lives and work, and collaboratively to develop critiques of social conditions which sustain

dependences, inequality or exploitation in any research enterprise in particular, or in social life in general."
(p.153)

3.3.7 Emancipatory action research has at its centre reflective practice. Through reflection the teacher can more fully understand his educational values and develop a critical theory which will indicate what action he needs to take to more satisfactorily implement his educational values. Thus, emancipatory action research can be seen as a "moral science" (Elliott,1991) concerned with the ethical consequences of practice. However, emancipatory action research is only one form of action research and its focus on ethical values is felt by some researchers to be inappropriate for some forms of classroom enquiries.

Self-evaluation Action Research.

3.3.8 Ebbutt (1985) has classified a variety of types of Insider-Research in schools and has identified two forms of action research. In practice action research does not fall conveniently into one or the other of these categories, but the categories are helpful distinctions with which to discuss two broad strands of action research. Ebbutt identifies one form of action research which has all the characteristics of emancipatory action research and which he classifies as "classic action research". In addition he defines an alternative form of action research as "self-evaluation action research" which refers to action research in which the teacher is less likely to work collaboratively but still systematically collects data, reflects on his practice and consequently changes his practice. In essence this form of action research is what Hopkins (1985) refers to as "classroom

research".

3.3.9 Essentially, "self-evaluation action research" or "classroom research" is different to emancipatory action research because it does not claim to make "ethical practice" its central concern but practice generally. Hence, the methodology of action research is seen as a methodology which all teachers can use to improve their own practice. Hopkins (1985) refers to this distinction when he says about action research:

"What began as a useful label to describe a loose set of activities undertaken for professional development purposes is in danger of assuming a rather different character as a result of a quest for intellectual credibility." (p.39)

In making this comment he is arguing that emancipatory action research has evolved because of a quest by some action researchers for intellectual credibility and as a consequence emancipatory action research is not a useful form of research for professional development.

3.3.10 The following two examples of action research enquiries illustrate the nature of self-evaluation action research.

(a) Sandra Meister, reported in Hopkins (1985), was concerned that she was not allowing her pupils to think independently and so she analysed the types of questions she asked her pupils. She used an observer and audio-tapes to collect the data, and from the analysis she concluded that while many of her questions asked for critical thinking she consistently asked one of only three pupils for answers. She planned in the future to ask a

wider selection of pupils for their answers.

(b) Kevin Eames (1991) wished to improve the quality of his pupils' reviewing of their learning in the context of Records of Achievement and Profiling. Focusing on one child he recorded the pupil's written reviews and the conversations between teacher and pupil about the quality of these reviews. Eames concluded that through dialogue he could encourage the student to both more effectively reflect on what he had achieved, and set appropriate targets for his future learning. This enquiry raised two further issues: how to engage in dialogue with all pupils in a class of thirty; and how to make more use of other forms of dialogue in the classroom, including written dialogue.

3.3.11 In each of these enquiries the teachers identified a gap between what they wished to do in their classrooms and what was actually happening, used action research methodology to collect data, reflected on the data and drew up plans for further action. These enquiries were carried out by individual teachers, were written up only in brief reports and have not attempted to offer hypotheses for other teachers to test in their own practice. However, it is clear from each of these enquiries that the individual teachers made some improvement in their own practice.

The Relative Status of Emancipatory Action Research and Self-evaluation Action Research Within the Action Research Community.

3.3.13 It was shown in Section One of this chapter that the action research movement, principally through the pioneering work of Stenhouse and Elliott, has shown how the responsibility for classroom research can be shifted from the academics to teachers, with teachers ultimately defining the subject of the enquiries, systematically collecting data and reflecting on their practice, and then developing hypotheses as a consequence of this reflection. Emancipatory action research and self-evaluation action research have both grown out of this movement. The general status of action research within the wider research community was considered in detail in Section Two of this chapter. This section now considers the relative status of emancipatory action research and self-evaluation action research within the action research community.

(a) Emancipatory Action Research.

3.3.14 The emancipatory action research of Elliott, and Carr and Kemmis, has high status in the action research community and is widely cited by other writers. The status of their work is also reflected in the fact that it has been sponsored by bodies such as the Schools Council and the Ford Foundation. Elliott and Carr and Kemmis themselves feel that emancipatory action research is the only worthwhile form of action research. For example, Elliott (1991:55) has argued that

"Teachers' attempts through action research to improve the educational quality of pupils' learning experiences necessitates reflection about the ways in which curriculum structures shape

pedagogy... Teacher researchers who neglect the operation of curricular structures reduce action research to a form of technical rationality aimed at improving their technical skills."

3.3.15 Carr and Kemmis (1983:177) have similarly argued that

"we must show that action research provides a way of distinguishing ideas and interpretations which are systematically distorted by ideology from those which are not, and how it provides a view of how distorted self-understanding may be overcome."

These views would appear to argue that self-evaluation action research should not in fact be thought of as action research at all. However, while Elliott's and Carr and Kemmis' work may be held in high regard by many action researchers, their restricted views of what can be considered to be action research are not universally accepted.

(b) Self-evaluation Action Research.

3.3.15 Commentators who defend self-evaluation action research as a valid form of research have in fact extended the focus of action research to include research into practice which may not have as its central concern ethical values. They also suggest that the results of this form of research do not necessarily need to have any relevance for other practitioners. Nixon (1981), for example, says that the strength of action research is that it "allows teachers to learn about their own classrooms" (p.6) while McCutcheon (1981) says that it provides opportunities for teachers to pose questions that are relevant to themselves. From this perspective action research provides a methodology which allows teachers to develop professionally and to improve their practice through their own systematic

reflection. This perspective has been contrasted with and preferred to "academic research" by Bassey (1986) who feels that action research should be a "study of singularities" in a single classroom and should have as its aim the improvement of the teacher researcher's own classroom practice.

3.3.16 Because of the private, idiosyncratic nature of action research within this perspective it is not considered necessary for research reports to be lengthy documents to be validated through public critique. The results need only be validated by the teacher researcher himself.

3.3.17 This form of action research has wide support in academic circles and it is possible to argue that teachers cannot develop professionally if they do not consistently engage in action research enquiries into their own practice. However, while a strong case can be made for self-evaluation action research in terms of professional development, it is difficult to see how educational theory in a broader sense can be advanced by isolated teachers reflecting in the privacy of their own classrooms. This form of action research seems to assume that all teachers are equally able to systematically reflect on their practice without help and that their hypotheses will always be valid. In fact, criticisms have been levelled at self-evaluation action research based on its validity as a form of research, and its contribution to educational theory. For example, Walker (1985) and Ebbutt (1985), have argued that if classroom enquiries are not written up in thorough reports and presented for public critique then the validity of the systematic reflection is undermined. Adelman (1989) has criticised the quality of teachers' accounts of their self-evaluation action research, as reported for example by McNiff (1988), because the

enquiries are so idiosyncratic that they do not contribute in any way to "the wider reconstruction of education." (p177).

Conclusion.

3.3.18 There is agreement amongst action researchers that systematic reflective practice carried out by classroom teachers is essential if the quality of education is to be improved. However, within this paradigm two strands have emerged. One form of action research, emancipatory action research, focuses on the need for ethical issues to be central to classroom research, and argues that enquiries need to be written up in thorough reports and presented for public critique for validation. This form of action research is carried out collaboratively and general hypotheses are offered for others to test in their own practice. Another form of action research, self-evaluation action research, focuses on the improvement of practice and does not stress the need to reflect on ethical issues. It is generally carried out by individual teachers, is not written up in thorough, formal reports and its relevance for other teachers is limited.

3.3.19 Because these two forms of action research have different purposes and different outcomes it is not possible to argue convincingly that one form is more valid than the other. Each has the potential to contribute in some way to improvements in the quality of education although on different scales. It was argued in Section Two of this chapter that action research methodology is not superior to positivist research methodology, but that it is more appropriate for some forms of educational research. Similarly, it must be argued that neither emancipatory action research nor self-

evaluation action research is superior to the other, but each is more appropriate in different circumstances. Once it has been accepted that action research is an appropriate and valid paradigm within which to carry out classroom research the issue is not which form of action research is most valid, but

"the extent to which the model is appropriate; appropriate to the skills of the teacher, the constraints of the classroom and the nature of the problem to be explored" (Nixon,1981:7).

The next section of this chapter considers how, within the general action research framework devised by Lewin (1946), different models of action research have evolved. It can be seen that the different nature of these models has been influenced by the different forms of action research discussed in this section.

Section Four: Action Research Models.

3.4.1 In the previous section of this chapter it was argued that there are various models of action research each of which can be broadly classified as either emancipatory action research or self-evaluation action research. This section focuses on a number of specific action research models and considers how valuable their diagrammatic representations are for the classroom practitioner. It is possible in this way to trace contemporary action research back to the influence of Kurt Lewin. Elliott's and Kemmis's models can be seen as developments of Lewin's model in an attempt to bring academic rigour to action research. However, the diagrammatic representations of these models have been criticised by some action researchers because their complexity confuses classroom teachers. Oven's and Hopkins's models of action research are viewed as attempts to present action research in ways which are easily accessible to the classroom teacher.

Lewin's Action Research Model.

3.4.2 The social psychologist Lewin is credited by many commentators as the researcher who contributed most significantly to a specific action research model (McKernan,1991; Kemmis,1982; McNiff,1988). His research was not principally into education, and he carried out various research projects into subjects such as eating habits, industrial unrest, and the problems of

racial and religious prejudice. In these projects he argued that action research required group participation through democratic processes in order that the groups themselves could contribute to solutions to their own problems.

3.4.3 His work in 1945 for the Commission on Community Interrelations (CCI) illustrates the nature of his action research. The CCI understood that to research into racial tensions Lewin could not wait for all the evidence to be collected before he acted. A beginning was made with the understanding that was available and through engaging with the participants a more reliable understanding was achieved. Action became research and research action (Marrow, 1969). Because the research was into a social situation Lewin did not research for facts but relied on the application of postulates of group dynamics to reduce the racial tension. By engaging the community being researched, enquiring into their perceptions and problems, and involving them in the proposed solutions Lewin aimed to reduce the racial tension. Through this form of participatory action research he hoped to disclose particular understandings about a specific circumstance, rather than general principles, which could then provide an example for other communities with similar problems.

3.4.4 Lewin developed an action research model (Figure 3.1) which comprised of a series of action research steps, each of which had four stages: planning, fact-finding, execution and analysis. Planning began with a problem which required a solution. An enquiry was held in order to collect more data, from which a proposed plan of action was derived. This proposed plan of action was implemented and carefully monitored to evaluate its

effect. As a consequence of what had been learnt from this cycle, the researcher spiralled into a similar cycle, the solution to the original problem being better defined from what had been learnt from the first cycle. This spiralling could take place again, with continuous evaluation trying to improve the originally identified problem.

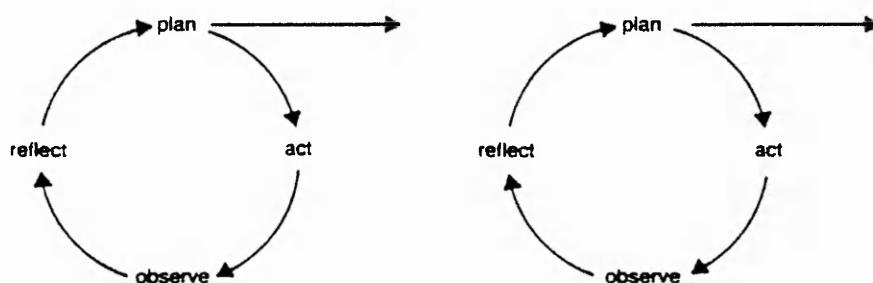


Figure 3.1 Lewin's model of action research, as interpreted by McNiff (1988).

3.4.5 It is significant that while Lewin expressed a commitment in his research to democratic values, he was essentially an empirical-rational scientist. Hopkins (1985) emphasises the positivist nature of Lewin's concept of research which saw action research as

"(i) an externally initiated intervention designed to assist a client system, (ii) functionist in orientation, and (iii) prescriptive in practice." (p.39)

However, Lewin's concept of researchers trying to understand a social problem, and then generating action to solve the problem through a spiral of planning, fact-finding, execution and analysis, was taken up by curriculum researchers in the 1960s. Two major models of action research which were developed from Lewin's work were that of Elliott and Kemmis, but it can be seen that their diagrammatic representations of the action

research cycle were far more developed than Lewin's.

Elliott's "Framework for Self-Evaluation in Schools."

3.4.6 Elliott developed his "Framework" (1982) in terms of Lewin's spirals, and in fact defined his own model as a revised version of Lewin's model. However, Elliott has argued that his own model more clearly illustrates the inherent flexibility of contemporary action research. He feels that Lewin's model may imply to practitioners that action research is simplistic and consists of discrete steps. Elliott's model reflects his view that within the action research cycle

" The general idea should be allowed to shift;

Reconnaissance should involve analysis as well as fact finding and should constantly recur in the spiral of activities rather than occur only at the beginning;

Implementation of an action research step is not always easy and one should not proceed to evaluate the effects of an action until one has monitored the extent to which it has been implemented."
(Elliott, 1991:70).

3.4.7 Elliott's model (Figure 3.2) defines four steps in each action research cycle which are described in the following way:

1. Identifying and Clarifying the General Idea: the general idea is an issue which the action researcher wishes to change, but which may need to be constantly altered as the enquiry progresses and the researcher's understanding of the issue improves.

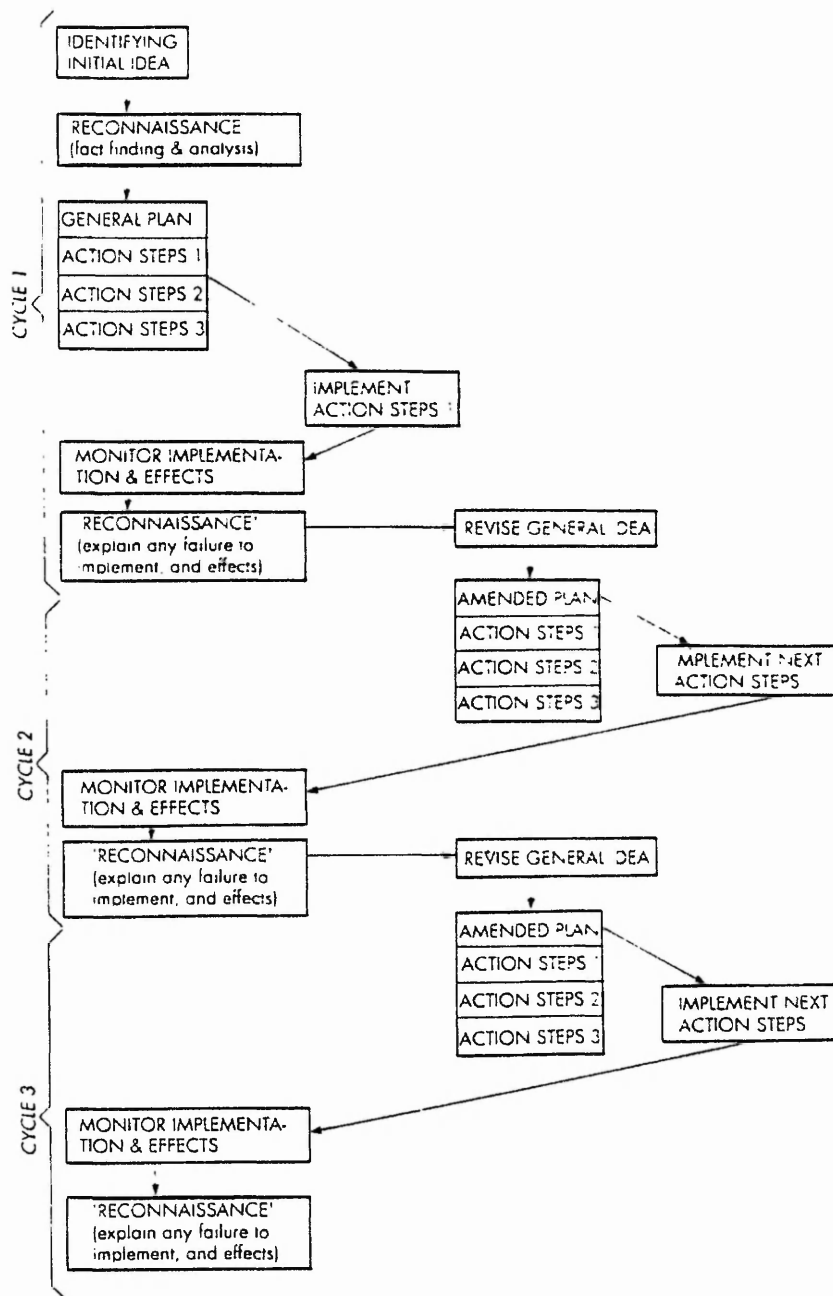


Figure 3.2 Elliott's model of action research.

2. Reconnaissance: the action researcher needs to describe thoroughly the nature of the issue being researched in order to clarify the nature of the problem. The researcher then needs to move from description to critical analysis which will generate hypotheses which will be used to guide action.

3. Constructing the General Plan: this general plan consists of the factors which the action researcher is going to change or modify in order to improve the situation. It will also include a clear statement of the ethical framework which has been drawn up in consultation with all relevant parties.

4. Developing the Next Action Step: the action researcher needs to constantly evaluate the action as it is happening, in order to identify what is happening, in terms of both intended and unintended outcomes. The evaluation of the action may lead the action researcher to identify modifications and changes to the original general idea, and the original general plan of action. These changes, in turn, will lead the researcher into the next cycle of action research.

3.4.8 Elliott's major departure from Lewin's model can be seen in the two stages 'General Plan' and 'Amended Plan'. The number of stages in 'General Plan' indicate Elliott's contention that the implementation of an action plan is not easy. The stage 'Amended Plan' illustrates diagrammatically that as a consequence of the monitoring of the action, the general idea will most likely need to be modified. In common with Lewin's model the overall action research spiral is made up of a number of action research cycles. Elliott recommends that generally three or four cycles should be

carried out in order to satisfactorily affect change.

3.4.9 Elliott's "Framework" was written in 1982 and was the model of action research used in the TIQL project. In the "Framework" he acknowledged the influence of Kemmis's (1982) "Action Research Planner" which he saw in draft form before he defined his own model. Consequently, it is not surprising that the "Framework" and the "Planner" have much in common.

Kemmis's "Action Research Planner".

3.4.10 In his "Planner" (Figure 3.3) Kemmis defines four 'moments' of the action research cycle:

a plan of action to improve what is already happening;

action to implement the plan;

observation of the effects of the action;

reflection on the effects as a basis for further planning and action.

3.4.11 These 'moments' clearly reflect the four stages of both Lewin's and Elliott's models of the action research cycle and Kemmis also uses the same image of a number of cycles combining to form an action research spiral. In common with Elliott, Kemmis also identifies the flexible nature of action research and the provisional nature of the original action plan. Kemmis also stresses that action research is a dynamic process, not a process of static steps, and he advises action researchers to "work

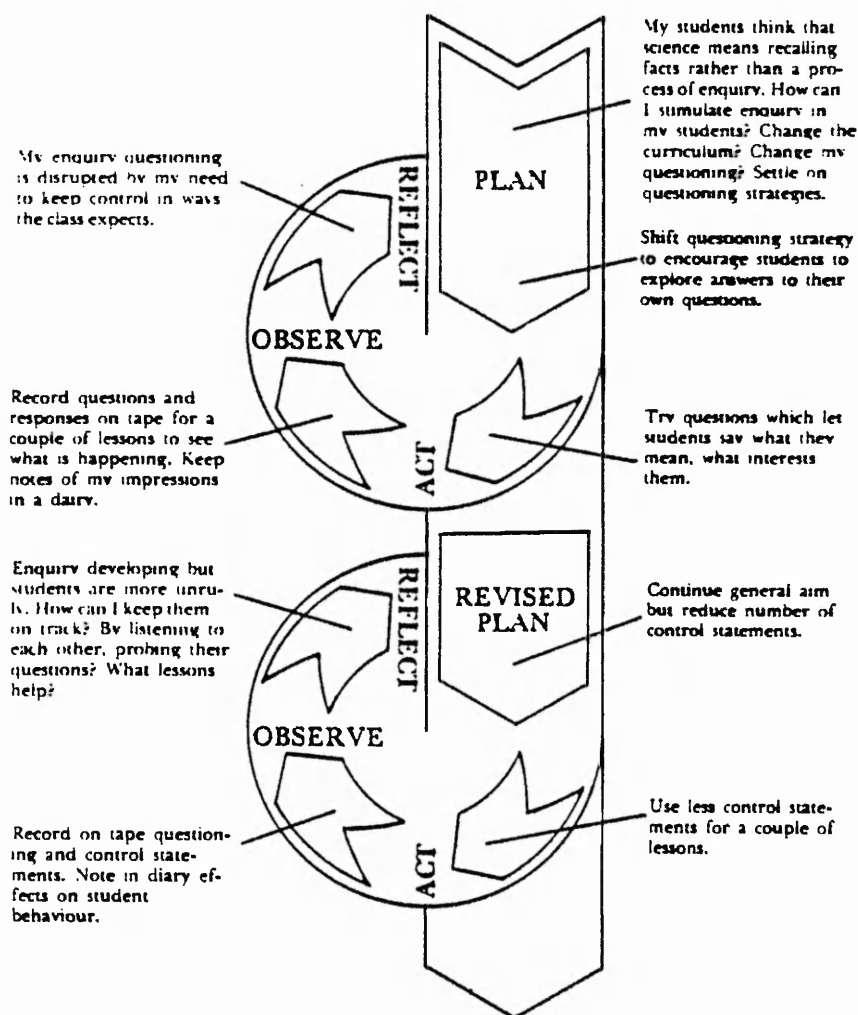


Figure 3.3 Kemmis's model of action research.

systematically and reflectively, thinking about the whole problem as well as the part you are immediately concerned with" (p.16).

Criticisms of Elliott's and Kemmis's Diagrammatic Representations of the Action Research Cycle.

3.4.12 Elliott's and Kemmis's models of the action research cycle have clearly grown out of Lewin's model of the four stages of planning, fact-finding, execution and analysis. However, their diagrams explaining this cycle are far more detailed representations than Lewin's and they have attracted some criticisms from action researchers. Although both of the models have consciously tried to represent the flexible and dynamic nature of action research Elliott's diagram most successfully represents what Ebbutt (1985) has called the 'messiness' of the action research cycle. Ebbutt has criticised each of the diagrams based on his experience of teachers' responses to the "Framework" during the TIQL project. He defined three types of negative teacher response to the diagram: bemused and daunted acquiescence; literal critique; and dissociation, and observed that some teachers were unclear at any moment in their enquiries where their activities fitted into the diagram of the action research cycle. More fundamentally, Hopkins (1985) has argued that even if teachers are not confused by the diagrams "the tight specification of process steps and cycles may trap teachers within a framework which they may come to depend on which will consequently inhibit independent action" (p.40). McNiff (1988) has similarly argued that the diagrams "do not accommodate spontaneous, creative episodes" (p.35) which may not initially appear to the action researcher to be part of the main enquiry but which may still be

significant.

3.4.13 These various criticisms of Elliott's and Kemmis's diagrammatic representations of action research are based on the belief that action research should be made easily accessible to the classroom teacher . The diagrams have been criticised because it is felt that in an attempt to achieve academic credibility they have mystified action research for the classroom teacher. From this perspective action research is viewed as a form of enquiry which all teachers should be able to carry out to improve their practice, and consequently elaborate diagrams of the process are seen to be inappropriate because they either (a) do not represent the reality of the action research cycle, or (b) bemuse teachers and so make it less likely that action research will be conducted.

3.4.14 It is appropriate that those action researchers who see action research as a methodology which should be used by all teachers to improve the quality of their practice, should also argue that diagrammatic representations of the process should not mystify it. Instead, action research should be presented in a way that can be easily understood by teachers. In response to this view Ovens (1991), for example, has introduced a representation of action research which he hopes will achieve a degree of "user friendliness" which may help classroom teachers engage in action research. His representation (Figure 3.4) identifies three 'ingredients':

(a) private reflection which should be recorded in a way comfortable to the practitioner;

- (b) data with which to sharpen the practitioner's reflections;
- (c) personal contacts to enlarge the practitioner's reflections and to challenge interpretations put upon data.

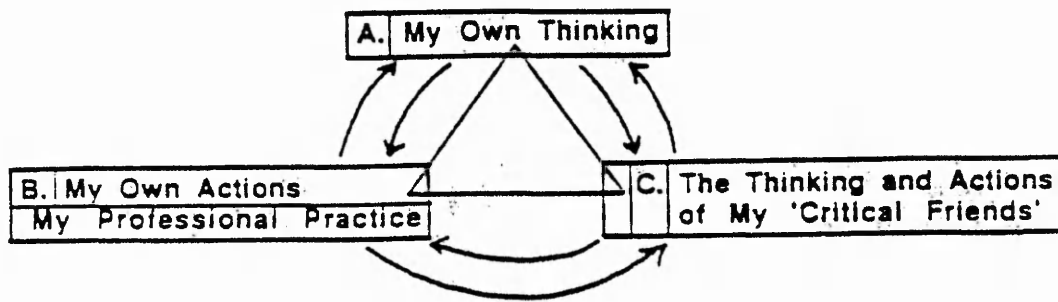


Figure 3.4. Owen's model of action research.

3.4.15 He concludes that "it is impossible and undesirable to have a fixed sequence, procedure or set of methods" (p.33) and argues instead that valuable action research can be conducted by combining these broad principles into enquiry into classroom practice.

3.4.16 Hopkins (1985) adopts a similar position when he chooses not to produce an elaborate step by step model, but instead discusses a series of methods and techniques such as (a) ways in which classroom research projects can be identified and initiated, (b) methods of data collection, (c) methods for interpreting and analysing data, and (d) ways in which the research process can be sustained. He hopes that if teachers use these methods and techniques in their own classrooms it will empower them to extend their "repertoire of professional behaviours" and encourage "flexibility in professional development" (p.41).

Conclusion.

3.4.17 Action research has not been totally accepted by the wider research community as a valid form of research largely because it does not have the rigour demanded by positivist researchers. Elliott's and Kemmis's representations of the action research spiral appear to be attempts to address these criticisms and if they increase the wider credibility of action research as a valid research paradigm they should be welcomed by all action researchers. However, it must also be accepted that if teachers are to be encouraged to engage in action research in their own classrooms, simpler representations of the action research process, which do not mystify the process, are also desirable.

Section Five: Locating This Research Programme Within The Action Research Paradigm.

Introduction.

3.5.1 In this section it is argued that the research programme which is the subject of this thesis can be classified as emancipatory action research. However, the diagrammatic representations of the action research spiral, such as Elliott's, do not adequately define the complexities of this enquiry. It is necessary to summarise the essential qualities of emancipatory action research which were identified in Section 3.3, and then show how this research programme embodies these qualities. A careful analysis of a diagrammatic representation of the stages of this research programme serves to locate the programme within the action research paradigm, and also serves to illustrate some of the limitations of diagrammatic representations of action research.

The Essential Qualities of Emancipatory Action Research.

3.5.2 Emancipatory action research is collaborative in nature, and enquires into the ethical values of education. From this perspective it is believed that pupils should come to their own understanding of human action through consideration of controversial issues, and that teachers should be more concerned with the manner in which pupils think rather than in the precise

outcomes of their thinking. Teachers must give careful consideration to the ethics of their practice so that they can avoid influencing and manipulating the pupils' thinking. Through reflection in action the teacher can emancipate himself from the influences of habit, custom ,precedent and bureaucratic systemisation. A critical theory will emerge from this reflection which will indicate how the individual teacher needs to modify his own practice in order to achieve what he defines as his own educational values.

3.5.3 Reflection in action takes place within the action research spiral which consists of a number of action research cycles each of which has the following four steps:

1. Identifying and clarifying the general idea of what needs to be improved.
2. Reconnaissance, to clarify the nature of the problem, leading towards general hypotheses which will guide further action.
3. A General Plan, which records what is going to be done to change or modify the situation.
4. Development of a subsequent Action Step. Constant evaluation takes place in order to identify what is happening in terms of both intended and unintended outcomes. This may lead to modifications in the original general idea and the original general plan of action. These changes lead into the next cycle of action research.

3.5.4 Thus, if this research programme can be classified as emancipatory action research it will be possible to identify (i) the ethical values

which are central to the enquiry and (ii) how the enquiry offers emancipation from influences of habit, custom, precedent and bureaucratic systemisation. It must also be possible to see how the enquiry has been collaborative in nature, and how it makes use of the action research spiral.

The Ethical Values of the Research Project.

3.5.5 It is possible to argue that over the last two decades in this country the teaching of English has been more concerned with process than product. Pupils' own responses to literature, and to situations in their own lives, have been central to written work, oral work, and educational drama. The drafting process has focused on a process model of writing in which the germination and reorganisation of ideas has been valued. This focus on process has been criticised because it has allegedly reduced the quality of the final product, evidence being found in poorer spelling, punctuation and grammar.

3.5.6 In my own teaching I have been particularly concerned with the process of library research. I have been concerned that the quality of research carried out by pupils has been poor, and I have identified a number of weaknesses. In my experience (i) Research tasks set by teachers are often aimless (ii) Copying by pupils from texts is widespread (iii) High quality presentation of copied material is highly valued by teachers (iv) Very little value, if any, is given to synthesis of sources, and personal understanding.

3.5.7 I have an ideal of library research empowering pupils to enquire into issues which concern them personally, and allowing them to come to informed personal views. Traditionally, the teaching of library research skills has been seen as the responsibility of English teachers. In my own experience I was confident that I had taught many pupils to engage in effective library research into issues they chose themselves such as abortion, homelessness, drug-taking and alcoholism. I had received many research reports from pupils which showed that they had been able to collect information, analyse it, reflect on it and arrive at their own informed views about the subjects they had researched. However, I was also sure that these research skills were not being transferred to other curriculum areas. Habit, custom and precedent seemed to be preventing pupils from transferring skills learnt during English lessons to other curriculum areas. While I was able to provide the pupils with skills which empowered them to think independently during English lessons, habit, custom and precedent appeared to be preventing them from using the same skills in other curriculum areas. I wanted to conduct an enquiry into conditions which would increase the possibility of pupils transferring the research skills they learned during English lessons. In this way I wished to emancipate myself from the constraints which prevented me from realising my own educational values. However, more significantly, I felt that if I could identify conditions which increased the transfer of these skills in appropriate circumstances I would be emancipating the pupils themselves from the constraints which inhibited them from engaging in independent thought.

3.5.8 This research programme has some of the qualities of self-evaluation

action research because it does have as one of its foci the improvement of the teaching of a technical skill: library research skills. However, the programme goes beyond this because the purpose of improving the teaching of the skill was to empower pupils to engage in informed, independent thought across the curriculum. Hypotheses are offered in Chapters 5 and 6 which may help to emancipate pupils and teachers from the influences of habit, custom and precedent which conspire against pupils engaging in informed, independent thought.

The Collaborative Nature of the Research Programme.

3.5.9 The first part of the research project was essentially focused on the improvement of my teaching of library research skills, and as such may be classified as self-evaluation action research. However, the programme increasingly became collaborative in nature.

3.5.10 In the first instance my tutor Dennis Fox was an invaluable critical friend who played a central role in the enquiry. Initially he helped to clarify the nature of the problem I had only vaguely identified. Then he insisted that the concepts I defined in the initial stages of the enquiry, such as transfer and metacognition, were precise and valid in terms of the available research literature. He also advised me about data collection methodology. As I collected data he discussed the implications with me and in challenging my hypotheses he encouraged me to show that the hypotheses had validity in the sense that they genuinely emerged from the available data.

3.5.11 At various moments in the enquiry different colleagues collaborated with me. At the outset all the Heads of Department in one school helped to identify library research skills as skills which they wanted pupils to transfer across the curriculum. During the Pilot Study I asked the school librarian and two colleagues for their opinions about the Study Pack I had designed, and I responded to some of their advice. Another colleague acted as an observer during the Pilot Study. During the main enquiry, as I became more confident in my own understanding of what I was doing, I discussed my findings and hypotheses with all the members of the English department. Three of these teachers became so interested that they used the Study Pack with classes that they taught and provided me with feedback from their own observations about the quality of the pupils' research. In addition two colleagues acted as observers. The pupils themselves collaborated in the enquiry in the sense that they were aware while working through the Study Pack of the reasons I was observing and collecting data. Their views were a significant part of my enquiry into conditions which may promote or inhibit the transfer of library research skills.

3.5.12 This research programme was not collaborative in the same way as large projects such as the TIQL project, in which many teachers shared their experiences and collectively generated hypotheses. However, it can be seen to be collaborative in that the pupils and a large number of interested teachers, in addition to my university tutors, influenced the directions of my thoughts and helped me to derive my hypotheses.

The Action Research Spiral.

3.5.13 In Section Four of this chapter various models of the action research spiral were considered. Criticisms were levelled at the diagrammatic representations of action research offered by Elliott and Kemmis because they did not necessarily represent the reality of action research enquiries. It is possible to see that this research programme has been carried out within the action research paradigm. However, it is also possible to show, by trying to represent the programme in terms of Elliott's "Framework", that published diagrammatic representations of the action research spiral may be both simplistic and restrictive.

3.5.14 Figure 3.5 is a diagrammatic representation of this enquiry in terms of the stages defined in Elliott's "Framework". In the left-hand column I have identified each stage of the enquiry. The diagrammatic representation takes up the central column. In the right-hand column I have identified moments in the enquiry which deserve comment. These comments appear below.

Commentary.

(a) The Initial Plan.

3.5.15 The initial plan of this enquiry was to identify conditions which may promote or inhibit the transfer of library research skills. However, this could only be explored if the pupils had successfully learned library research skills. Consequently, a secondary issue of the initial plan was to define how library research skills could be taught effectively. Hence, from

STAGE ONE

STAGE TWO

STAGE THREE

STAGE FOUR

STAGE FIVE

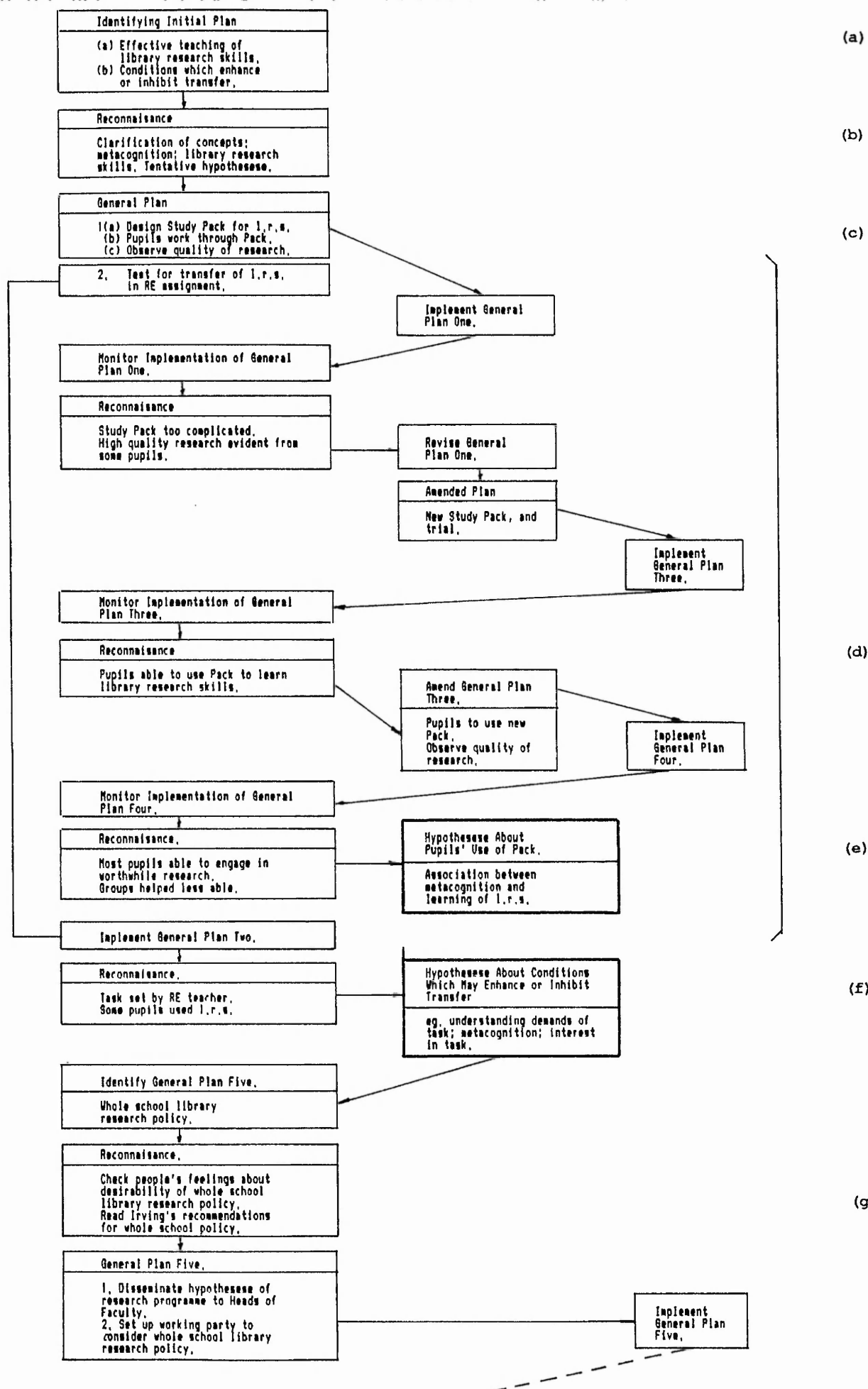


Figure 3.5 Diagrammatic representation of the research programme.

the very beginning of this enquiry two themes rather than one were identified.

(b) Reconnaissance.

3.5.16 The diagrammatic representations of action research enquiries do not adequately represent the time-scale of events. The first reconnaissance of this enquiry was a lengthy procedure as within the two themes initially identified three strands of interest needed to be researched: what library research skills are; how they could be effectively learned by pupils; and the current theories about the transfer of learning. This reconnaissance stage of the enquiry involved a consideration of the relevant research literature over a period of two years.

3.5.17 An essential quality of action research is that it does not test hypotheses, but allows hypotheses to emerge from the observation and reflection upon action. However, it would not seem possible to engage in wide-ranging research into the literature on issues such as the transfer of learning without generating tentative hypotheses which will provide some of the focus of the enquiry. It is important, however, that these initial hypotheses are tentative and that they do not prevent the researcher from observing other factors which have not emerged from the existing research literature.

(c) The Initial General Plan.

3.5.18 Elliott's diagram implies that action research can only be used to enquire into issues which can be researched in a linear manner with each cycle of the research spiral improving the circumstances being researched then logically leading into the next cycle. In this research programme there were two distinct issues identified in the initial General Plan. It may be argued that the two issues represent two different research spirals, each requiring a number of research cycles. However, in my view there is such an essential link between the two issues that they can only be considered as two integral parts of a larger General Plan represented by the whole research enquiry. This form of research enquiry is not adequately represented by Elliott's diagrammatic representation of action research.

(d) Implementing General Plan One.

3.5.19 This stage of the enquiry is a very good example of what has been defined as the action research spiral. The Study Pack was identified as something which needed to be improved. Through reconnaissance, action, observation and reflection improvements were made. Two action research cycles can be identified in this process. In fact, if the original pilot of a Study Pack is seen to be a precursor of the final Pack then three cycles can be identified in the spiral.

(e) Hypotheses About the Pupils' Learning of Library Research Skills.

3.5.20 At point (e) the first General Plan was completed. At this stage it

was necessary to draw hypotheses about the relative value of the Study Pack in helping pupils to learn library research skills. If the Study Pack had not been successful then the next stage of the enquiry could not have gone ahead. The hypotheses also had a significance for the next stage of the enquiry as they provided points of focus for observation. For example, it was possible to derive hypotheses about some associations between pupils who engaged in metacognition and those who learned library research skills. In the next stage of the enquiry it was possible to explore how far the pupils' transfer of library research skills was linked to these associations.

3.5.21 In a sense these hypotheses have also provided the "Amended Plan" of a future recurring cycle beyond this research programme as they will provide the focus for further reflection when teachers use the Study Pack in the future. Through reflection the original hypotheses will be refined and revised which will in turn lead to refinements in the Study Pack and our understanding about the pupils' learning.

3.5.22 Elliott's diagram of the action research process does not refer to finally drawing hypotheses at the end of an appropriate number of cycles. While this omission indicates that there is not a specified number of cycles in the spiral, it may also be interpreted by teachers that their practice cannot ever be satisfactorily improved. Diagrammatic representations of action research need to stress that at a pragmatic level a practice can only be improved so far and that each enquiry can only be continued for a reasonable period of time before hypotheses should be considered.

(f) The Transfer Task.

3.5.23 This stage of the enquiry does not fit comfortably into the accepted view of the action research cycle because it did not define an issue which needed to be improved through reconnaissance, action, observation and reflection. In some respects this stage may be seen as a reconnaissance stage of the larger General Plan. The pupils' performance in the transfer task, and their perceptions of their performance, provided essential data from which hypotheses were derived about conditions which may promote and inhibit the transfer of library research skills. In a sense, this stage of the enquiry also represents the first cycle of a future action research enquiry, as the hypotheses derived at this stage provide the focus for further enquiries into the pupils' transfer of library research skills and through observation and reflection these original hypotheses will in the future be refined and revised.

(g) Some Future Consequences of the Research Programme.

3.5.24 The original scope of the enquiry, which was to identify conditions which may promote or inhibit the transfer of library research skills, was in a sense completed after the hypotheses had been derived at (f). The formal account of the research programme, which is the body of this thesis, ends at this point. However, strictly, the enquiry has not come to an end as three strands of ongoing enquiry have emerged:

(i) As a consequence of their involvement with this enquiry the English Department has agreed a policy of using the Study Pack in future with all

Year 9 pupils. From the collective reflections of all the English teachers our practice will continue to be improved.

(ii) The English teachers are informally monitoring the degree to which library research skills are being transferred to other curriculum areas. From these observations and further reflection the hypotheses derived at (f) will be refined and revised.

(iii) More significantly, the research programme identified a clear need for a whole school shared view of what library research skills are. To this end the hypotheses derived from this enquiry were shared with the school librarian. As a result the school librarian and I made a joint presentation to the Heads of Faculty and Senior Management Team to illustrate how the library was being under-utilised, and how the school required a shared view of what library research skills are. It emerged that the Heads of Faculty had a shared aim to encourage pupils to engage in independent thought through library research, but that they themselves did not feel they had the necessary understanding of the research process to empower their pupils to engage in worthwhile research tasks. As a consequence of this presentation:

- (i) each faculty accepted the librarian's offer of INSET into the wider services offered by the library;
- (ii) each faculty accepted the need for INSET into the "Research Process";
- (iii) a working party has been convened with the aim of drawing up a whole school library use policy.

Conclusion.

3.5.25 (a) This research programme can be located within the action research paradigm, as central to the enquiry has been the concept of the reflective practitioner enquiring into practice through the use of action research methodology. However, the diagrammatic representation of this research programme makes it clear that the enquiry did not simply follow cycles of reconnaissance, action, observation and reflection leading to further action, as illustrated in Elliott's "Framework". Analysis of the diagrammatic representation of this research programme has identified some of the limitations of Elliott's "Framework".

3.5.26 (b) This research programme can be classified as emancipatory action research. As a consequence of reconnaissance, action, observation and reflection it has been possible to aim towards emancipation from the influences of habit, custom, precedent, and bureaucratic systemisation which have inhibited one avenue of independent thought for the pupils of one school. If the school Library Use Policy is successfully drawn up and successfully implemented, then many pupils will have a more just educational experience in which they will more likely be encouraged to engage in independent thought and so arrive at their own informed views about controversial issues.

Chapter Four.

The Research Programme.

Chapter Four: The Research Programme.

Introduction.

4.1.1 This chapter, divided into two sections, provides an account of the research programme. In the first section the Pilot Study is considered and in the second section the main body of the research programme is considered.

Section One. The Pilot Study.

4.1.2 The aims of the pilot study were:

- (1) to trial the Study Pack;
- (2) to explore whether the Study Pack could be used to introduce library research skills;
- (3) to explore whether supported self-study could help pupils to engage in metacognition;
- (4) to trial the data collecting methods.

4.1.3 The Pilot Study was conducted with a mixed ability class of twenty-six pupils, aged fourteen. There was an equal number of boys and girls. The results of a Widespan Reading Test administered to the pupils suggested that their average reading age was slightly below the norm for fourteen year old pupils. While it might have been expected that in a mixed ability class their standardised scores would be normally distributed across a standardised mean of 100, the standardised scores of this class ~~were skewed~~

below the mean, with only ten pupils in the class achieving standardised scores above the mean.

4.1.4 The pupils worked through a Study Pack that I had produced which led them through the stages of the library research process as defined by Irving (1985). This process is considered in detail in Chapter One, paragraph 1.14. The pupils selected an issue which they wanted to research and their involvement with the Study Pack led them from the formulation of the research task to the completed and evaluated written project. The pupils formed themselves into tutorial groups which operated as support groups whenever possible. The boys organised themselves into three groups of three, four and six pupils. The girls organised themselves into three groups of four, four and five pupils. Each of these groups was brought together once every fortnight for a tutorial. The pupils were involved in the research for a total of six weeks in their final term of Year.9. During this period they were allowed fifteen hours of class time and three hours of homework time.

4.1.5 During the period of the Pilot Study I collected data in the following ways:

- (a) While teaching the class, I played the part of an observer.
- (b) A colleague observed one lesson.
- (c) A sixth form pupil took still photographs of one lesson.
- (d) A video camera was set to run for one lesson.
- (e) The pupils recorded their personal responses to the whole experience in log-books.

(f) I kept a very detailed diary.

(g) The Study Pack was interactive and the entries made by the pupils provided data.

(h) The pupils' completed written projects provided data.

(i) The pupils responded to a Self-Assessment sheet. (see Appendix D).

(j) At the end of the six week period I interviewed six pupils individually.

The Aims of the Pilot Study.

Introduction.

4.1.6 During the trialling of the Study Pack I considered two associated but separate issues. My first aim was to see whether the pupils could cope with the reading demands of the text, and could follow the instructions given in the text. My second aim was to see whether the Study Pack could successfully introduce library research skills. It was possible that the pupils could cope with the reading demands of the text but still not learn any library research skills. I was ultimately interested in conditions which may promote or inhibit transfer of learned library research skills, and the research literature argued that metacognition was an important influence on transfer. The Study Pack had been deliberately designed so that pupils could carry out some supported self-study in the hope that supported self-study would enhance pupils' engagement in metacognition. My third aim was to see whether supported self-study would help pupils engage in metacognition. During the Pilot Study a great deal of both qualitative and quantitative data were collected. The fourth aim of the Pilot Study

therefore was to evaluate these data collecting methods.

Aim One: to trial the Study Pack.

4.1.7 The design of the Study Pack used in the Pilot Study (see Appendix A) was influenced by materials produced by the National Extension College, the Open University, and the research literature (see for example, Jones(Ed),1980; Lewis,1981). Prose passages led the pupils through each stage of the research process. Tasks appeared at significant moments in the text (a) to help the pupils summarise their reading of a section, and (b) to help them to consider whether they had understood each section. These tasks were never general, but were always made relevant to the issue the pupils had chosen to research. For example:

"Look back at the key-words you wrote in Box 4. In the space on p.10a write your key-words. Next to each word write the number it has been given in 'Crack the Code.' " (p.10)

A great deal of effort was taken to make the language appropriate to the reading abilities of the pupils. For example, the vocabulary was as basic as possible and the sentences were as short as possible. The Modified Fogg Index gave the reading age required to cope with the text as ten. Symbols were used systematically to indicate the beginnings of sections, the ends of sections, where summaries of sections appeared and where there were questions to be answered.

4.1.8 It became clear very early in the Pilot Study that for some pupils the Study Pack was inappropriate. This could be seen from the questions some pupils asked me about the meaning of the text, and also the misunderstandings evident in some of the pupils' responses to the questions in the text. The eleven pupils who had reading difficulties found the demands of the pack too great and so the mechanics of reading the text detracted from their understanding of the text. They also took so long reading the text that they did not engage in any independent library research but produced projects which amounted to unstructured, copied and illustrated passages from library reference books. However, there was evidence that the fifteen pupils who had average or above average reading ability were able to cope with the demands of the Study Pack. These pupils who had standardised scores of 90 and above worked quickly through the pack, responding appropriately to the questions.

Aim Two: to explore whether the Study Pack could be used to introduce library research skills.

4.1.9 The eleven pupils who had reading difficulties did not complete any supported self-study and did not either improve existing library research skills or learn new library research skills. However, there was evidence to suggest that those pupils who had average or above average reading skills did either improve existing library research skills or learnt new skills. Figure 4.1 is a summary of the responses made by pupils who had average or above average reading ability, after they had completed their research projects. It can be seen from the fifteen responses that the pupils felt that they had particularly improved their ability to synthesise retrieved

What have I achieved?

You should now have finished writing up your research. I hope you are pleased with the results. Now, put a tick in the appropriate column, to show how confident you feel about each Step of the research process. If you are not confident about any Step, write on a piece of file paper what you will need to do to become more confident.

	Very Confident	Confident	O.K.	Not Confident
Choosing a subject to research.	4	10	1	
Making a list of key-words.	15			
Using the Subject Index.	15			
Using other sources: Reference books	2	5	6	2
Newspaper articles.		1		14
Magazines.				15
Local societies.				15
Local libraries.	6	4		5
Television.				15
Other people.		1		14
Selecting suitable sources of information.	15			
Skimming and scanning.		2	9	4
Writing notes .	12	2	1	
Organising your notes.	10	4	1	
Writing an Introduction.	7	1		7
Writing a conclusion.	6	6	3	
Writing your article.	15			
Any other comments.				

Figure 4.1 Responses to the first Study Pack, made by pupils with average or above average reading ability.

information, and to write up their projects in their own words. The pupils' responses were verified as far as was possible through their responses in both the Study Pack and their log books, analysis of their completed projects, and interviews. Of these fifteen pupils thirteen said that they had enjoyed studying independently, and would have liked to have worked independently again in the future. However, they all observed that while the Study Pack did introduce them to new library research skills, it demanded too much reading which often interfered with the process of research.

Aim Three: to explore whether supported self-study could help pupils to engage in metacognition.

4.1.10 It is possible to say that in the Pilot Study there was evidence that supported self-study helped some pupils to engage in metacognition. This evidence was found in the pupils' responses in both their log-books and their Study Packs which were verified where possible through the tutorials and interviews. Pupils who were interested in the research task they had chosen and who were generally well motivated were more likely to engage in metacognition. However, it was also clear that other conditions influenced whether pupils engaged in metacognition. It appeared that pupils who were not interested in the research task they had chosen were less likely to engage in the library research process. It also appeared that some pupils did not engage in the library research process because they found it difficult to modify their existing poor library research practice. These pupils had learned that copied but well illustrated projects had been highly valued by teachers in the past and found it difficult to approach

project work in any other way. However, it may have been that pupils who fell into these two categories had actually reflected on the library research process, but had consciously chosen not to use library research skills.

Aim Four: to trial the data collecting methods.

4.1.11 My observations, the pupils' reflections during the whole process, the pupils' completed research projects, and my interviews with the pupils, were all central to my data collection. It could be seen that these data could be used to develop categories and concepts for consideration later in the Pilot Study. For example, pupils' responses in tutorials and in their Study Packs alerted me very early in the Pilot Study that some of the pupils were having difficulties with the reading demands of the Study Pack. This enabled me to closely monitor those pupils to consider how far the pupils' reading difficulties inhibited their learning of library research skills.

4.1.12 The additional data that I obtained from a colleague observer and still photographs helped to support some of my own observations but also drew my attention to things I had not noticed. For example, my colleague observer was able to support my view that the pupils were all engaged in producing projects. However, he also observed that two pupils had chosen to work collaboratively, one of them working through the Study Pack and giving instructions to the other. As it would have been difficult in this circumstance to ascertain how far the second pupil had coped with the Study Pack the pupils were asked to work on two different projects. These

additional data from my colleague observer and the still photographs also helped to validate many of my own observations.

4.1.13 I found that the most valuable data were obtained from the pupils' log-books, interviews and the pupils' completed research projects. It was largely through these data that I was able to explore the first three aims of the Pilot Study. To record the interview data I made notes during the interview and then wrote them up more substantially during the same day that the interviews were conducted. The only data that I collected during the Pilot Study but chose not to collect in the main body of the research was video data as I felt that it did not represent the reality of the situation as the pupils had performed in an artificial way to the VCR.

Issues Raised by the Pilot Study.

4.1.14 The pupils' performance data and their responses in both their log-books and their Study Packs, provided valuable data to suggest that some pupils were able to learn library research skills through supported self-study and that some pupils were helped to engage in metacognition. These data were verified where possible through the tutorial sessions and in interviews.

4.1.15 I had also anticipated that data collected through the tutorial sessions and in interviews would point towards conditions which were likely to promote or inhibit the learning of library research skills, or promote or inhibit the pupils' engagement in metacognition. Unfortunately the data I collected in these circumstances were not sufficient for me to make

observations with any confidence. However, the data did allow me to identify the conditions discussed in paragraph 4.1.10 which were productively explored in the main body of the research. That is to say, the data collected through the tutorial sessions and interviews allowed me to identify categories which were explored at a later stage of the research programme.

4.1.16 There was evidence in the Pilot Study that supported self-study was an appropriate way to introduce library research skills to some pupils. There was also evidence that supported self-study allowed some pupils to engage in metacognition. However, it was also clear that the reading demands of the study pack were inappropriate for those pupils with below average reading ability, and were a distraction for many other pupils. While I had found Irving's analysis of the demands of library research skills valuable, it was necessary to consider a new format for the Study Pack. Chapter One paragraphs 1.16 - 1.17 explain how the Education Department of Western Australia's use of "Study Support Cards" in a Study Pack on "The Enquiry Process" led me to produce a new Study Pack consisting of cards each explaining one step of Irving's research process. This new Study Pack dramatically reduced the amount of reading required of the pupils. It was trialled in a limited way with a mixed ability group of six pupils to assess the clarity of the instructions provided on the cards. The work produced by this group suggested that the new Study Pack enabled pupils with even below average reading ability to engage in library research. The main body of the research programme confirmed that it allowed more pupils to carry out a piece of library research, and encouraged more pupils to engage in metacognition.

The Main Body of the Research Programme.

4.2.1 This section provides an account of the main body of the research programme. This was conducted in a different school to the Pilot Study as I had moved schools. After a general consideration of the background to this part of the research programme the account is presented in four stages, reflecting the four stages of the pupils' involvement:

The Pupils' English Projects, using the Study Pack.

Stage One: planning and locating their sources.

Stage Two: collection of their information.

Stage Three: the writing up of their projects.

The Pupils' RE essays.

Stage Four: the transfer task.

Within each stage I have shown how the data that were collected helped to provide the focus for the following stages.

Background.

4.3.1 In this part of the research programme I explored:

- (a) the extent to which 14 year old pupils would develop library research skills by working through the Study Pack;
- (b) the extent to which they would be able to transfer library research skills they developed.
- (c) conditions which would promote or inhibit transfer of learned library research skills.

4.3.2 The class I focused on was a mixed ability class of 28 pupils, consisting of 13 boys and 15 girls. Based on the results from the Edinburgh Reading Test, which had been administered to the class in the previous year, their average reading ability was below the norm for 14 year old pupils. It may have been expected that as a mixed ability class their standardised scores would have been evenly distributed about the norm. However, only eleven of the pupils had standardised scores above the norm and four pupils were identified as being particularly weak at reading, with standardised scores below 85.

4.3.3 The pupils were involved in the research for a total of ten weeks, in two blocks of time spread over two terms of the same year.

Stage One: planning and locating sources.

Stage Two: collection of their information. February 28th - April 14th

Stage Three: the writing up of their projects.

Stage Four: the transfer task. June 6th - July 4th.

Within these periods the pupils were allowed twenty-one hours of class time and six hours of homework time to complete Stages 1-3, and four hours of class time and four hours of homework time to complete Stage Four.

4.3.4 It is possible to define four distinct times during which data were collected, and to describe the nature of the data that were collected.

A. Before the pupils used the Study Pack:

History projects that the pupils had researched and written the previous October. Twenty four projects were available for analysis.

B. During the learning of the library research skills:

pupils' log-books;
pupils' research notes;
pupils' completed English projects;
pupils' Self Assessment responses;
my diary and observations;
my tutorial notes;
observations made by other teachers;
photographs.

C. During the transfer task:

the pupils' completed essays.

D. After the transfer task:

pupils' Self Assessment responses;
interviews with all the pupils.

4.3.5 At each stage of the research these data allowed me to progressively focus on the pupils' ability to engage in metacognition, learn library research skills, and transfer those skills. From this "progressive focusing" I was able to identify conditions which promoted or inhibited transfer.

4.3.6 The algorithm, figure 4.2, illustrates the research questions that were asked and defines six categories within which the pupils could have fallen. The algorithm was defined by considering the three circumstances in which evidence of the pupils' library research skills were identified: in their History projects, which they wrote before working through the Study Pack; as a consequence of working through the Study Pack; in their RE essays, written after working through the Study Pack. The following categories were defined.

Category One: This contained pupils who had exhibited library research skills in their History projects and transferred them to their RE essay. One pupil fell into this category. (See paragraph 5.2.1)

Category Two: This contained pupils who had exhibited library research skills in their History projects but who did not transfer them to their RE essays. Two pupils fell into this category. (See paragraph 5.3.1)

Category Three: This contained pupils who did not exhibit library research skills in their History projects, developed library research skills while working through the Study Pack, but did not transfer them to their RE essays. Four pupils fell into this category. (See paragraph 5.4.1)

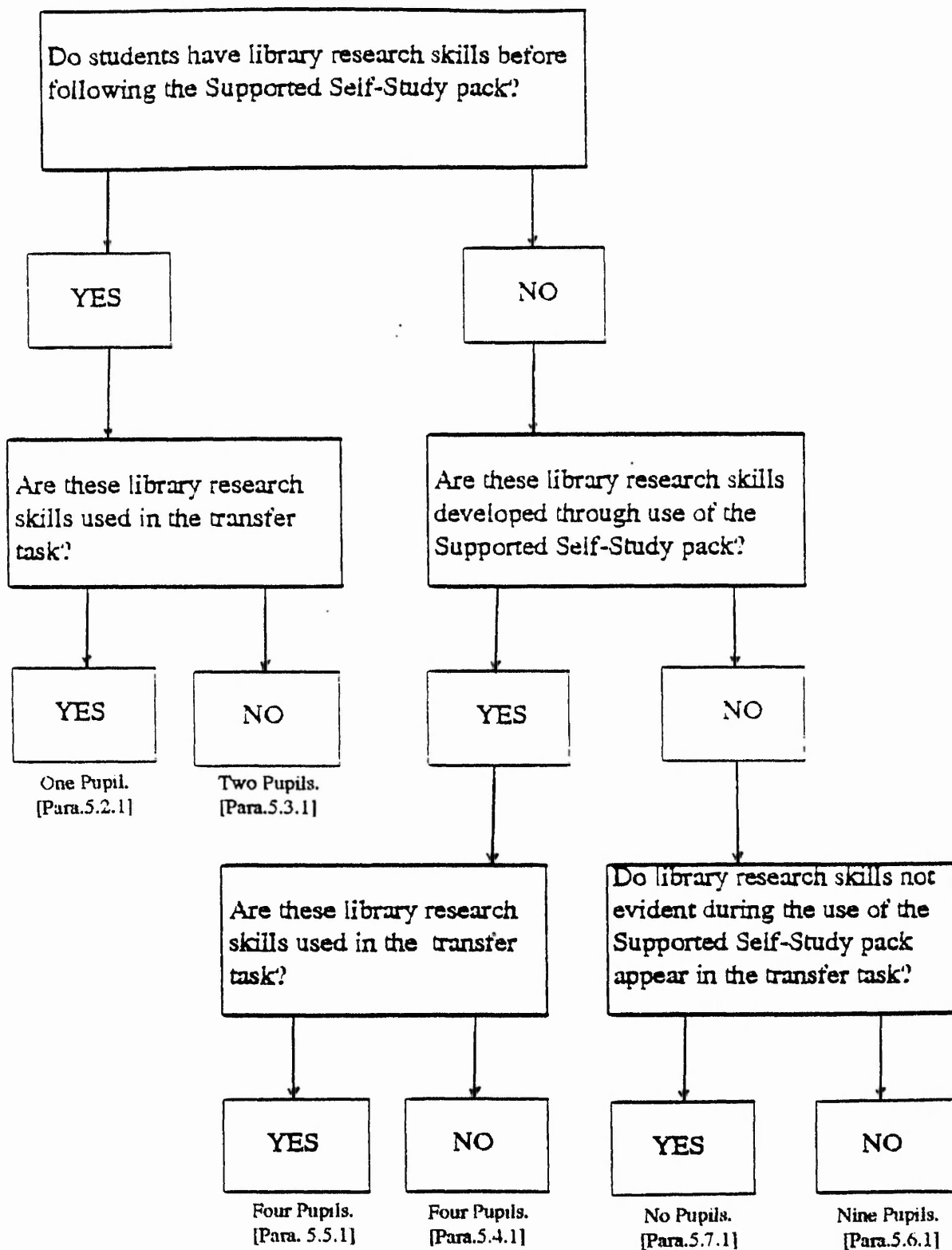


Figure 4.2 Algorithm to illustrate the research questions that were asked.

Category Four: This contained pupils who did not exhibit library research skills in their History projects, developed library research skills while working through the Study Pack, and transferred them to their RE essays. Four pupils fell into this category. (See paragraph 5.5.1)

Category Five: This contained pupils who did not exhibit library research skills in their History projects, did not develop library research skills while working through the Study Pack, and did not exhibit library research skills in their RE essays. Nine pupils fell into this category. (See paragraph 5.6.1)

Category Six: This would have contained pupils who did not exhibit library research skills in their RE essays, did not develop any library research skills while working through the Study Pack, but who did exhibit library research skills in their RE essays. However, no pupils fell into this category. (See paragraph 5.7.1)

STAGE ONE: planning and locating sources for the English project.

4.4.1 The first session with the pupils was spent in the classroom rather than in the library. The pupils were introduced to the Study Pack. I gave them the whole pack to look at so that they could become familiar with the layout of the cards and the use made of illustrative examples. I explained to them about the stages of the research process which they were to work through and emphasised that each stage was important. I explained that they would work through the Study Pack independently, at their own pace, to produce projects on subjects of their own choice. They were told that their

projects would be stored on a shelf in the library if they were of an appropriate quality. I explained that I was monitoring the success of the Study Pack and the way they themselves worked, and warned them of the potentially obtrusive nature of much of the data collection.

4.4.2 The pupils were given two exercise books each. One of these was a work-book. In this they wrote their notes from the research they carried out, and wrote their first drafts of their finished research projects. The other exercise book was their log-book in which, at regular intervals, they noted down their feelings about the work they carried out. In order to provide them with some focus for their log-book entries the pupils were asked to write the following questions on the inside front cover of their log-books:

1. Have I had any problems:

with planning?

with understanding the Study Cards?

with working on my own?

2. What should Mr. Pearce be told about my work this week?

4.4.3 The log-books served two main purposes. I collected the log-books each week and they provided me with some data about the children's progress so that I could respond to their problems immediately. The pupils' entries also proved to be reflective enough to help the pupils to engage in metacognition.

4.4.4 The pupils then arranged themselves into tutorial groups. The twenty eight pupils formed 6 groups with an average of 4 pupils in each group. Each of the groups was a friendship group and was made up of pupils of the same sex. These groups had a number of very important purposes.

(a) While working through the initial stages of the Study Pack the pupils worked together in their groups, providing each other with support. In this way the less able were helped with the reading of the study cards and were helped to make sense of the demands of the cards. Group discussion in the early stages also helped everyone to clarify what subjects they were going to research. The working relationships set up between the members of the tutorial groups in the early stages of their work also enabled pupils to seek assistance from the members of their tutorial group when they were working more independently.

(b) I had wanted to extract each tutorial group once a week for discussion but because of the practicalities of managing the class this in fact happened once in each of the first three stages of the pupils' work. These tutorial discussions enabled the pupils to raise problems that they had with their work and also enabled me to raise the pupils' awareness of problems that they did not realise they had. The discussions were always supportive. Above all, the discussions provided another opportunity for the pupils to reflect on their learning.

4.4.5 In their tutorial groups the pupils worked through the first three steps of the library research process which dealt with the planning of their research projects. In my opinion this is an area of fundamental

weakness in school project work. The School librarian confirmed that too often pupils are sent to the library to do research without having done any preparatory planning. In order to overcome the problem of pupils randomly referring to books in the library before their literature search had been structured, I made the pupils work through the first three stages of the research process in the classroom, and before they could enter the library they were required to show me:

- (a) their research question;
- (b) the range of sources they anticipated would be helpful;
- (c) key-words for use in the "Subject Index".

4.4.6 Although the successful completion of this stage of the pupils' work was important if their library research was to have any constructive focus, it took only thirty minutes. This first lesson was seventy minutes long. Consequently, after the pupils had discussed this planning stage of their projects in their tutorial groups, and then finally with me, they were able to go to the school library to begin their literature searches.

4.4.7 During this stage many of the pupils had difficulty at first moving beyond the identification of an issue to research, towards defining a research question to explore. This was probably due to the limited nature of the library research they had engaged in in the past. It was clear, however, that in many cases the members of the tutorial groups helped each other to define research questions.

4.4.8 I monitored each group during this planning stage and was able to assure most pupils that what they were doing was correct. However, I had to work more closely with four pupils who found it difficult to define their own research questions.

4.4.9 Once the pupils had defined their research questions they showed that they were all capable of generating key words and finding the appropriate Dewey Numbers. However, I felt that it was not until the pupils had tried to use their key words to collect information in the library that they were able to genuinely reflect on the value of the planning technique in general, and the quality of their own planning in particular. Because during this first lesson the pupils only had thirty minutes in the library they were only able to make tentative starts to their literature searches. However, for the last five minutes of the lesson I asked them all to record in their log-books their feelings so far. It was after their initial attempts to find information to answer their research questions that I had my first opportunity to see whether 14 year old pupils were able to engage in metacognition.

4.4.10 It was necessary for me to define what I would accept as evidence of metacognition at this stage of the pupils' work. Flavell (1979) gave as an example of a metacognitive strategy a strategy that allowed the pupils to monitor whether their learning had improved. In this context it was possible to say that pupils engaged in metacognition if they consciously monitored their use of any of the library research skills (see para. 2.1.16) The pupils' log-books, discussions in their tutorial groups and interviews with me all provided evidence of whether or not individual

pupils had been able to monitor the success of the planning of their research projects. I did not accept the pupils' claims in their log-books as evidence of successful monitoring of their learning without further confirmatory evidence, but their comments were used as starting points which were explored in interviews and observations. The evidence arrived at in this way was cross-checked with evidence from their actual research. Any claims made by the pupils of improvement in their research techniques were also cross checked with the evidence provided by their history projects.

4.4.11 If the pupils had successfully monitored their learning and come to some verifiable conclusions about whether they had improved the planning of their research projects, then I felt it was possible to say that they had engaged in metacognition. When evidence of pupils engaging in metacognition was found, the conditions which aided this engagement were identified. From the evidence of the pupils' planning in their note-books, their entries in their log-books, and follow-up interviews, it was possible to say that some of the pupils were able to reflect successfully on the planning stages of their research. For example, Rachel generated some key-words and used them in the Subject Index to try to locate sources. Because she could not initially find enough source material she generated further key-words and was much more successful. She later emphasised her pleasure in the process and in her use of the process. However, other pupils were not able to successfully reflect on the planning stages of their research. For example, John failed to define a research question, failed to use key-words, and did not refer to the Subject Index. He recorded in his log-book:

"I have no problems so far I got the books that I need.....I have thought of a question like you said... I am having no problems whatsoever."

In fact, John brought three editions of "The Guinness Book of Records" from home and copied entries from them onto file paper.

4.4.12 From the data obtained from Stage One of the research it was possible to identify the following issues which helped my focus during the subsequent stages:

(a) It was possible that in some ways supported self-study was an appropriate style of learning for some 14 year old pupils, and it allowed them to both learn and reflect on their learning. However, for other pupils of this age it was not an appropriate style of learning. I considered in the future stages of the research which aspects of this style of learning were able to help some pupils engage in metacognition.

(b) It seemed in these early stages that the pupils who were most able to reflect on the quality of their learning were those who were genuinely interested in the work they were doing. The issue of motivation was one that I monitored.

(c) Even in these early stages it seemed probable that some pupils were unable to change the bad habits, such as selecting books randomly from the library shelves without being led by a planned literature search, which they had developed through their previous experience of school "project work". I monitored this.

STAGE TWO: the collection of their information.

4.5.1 Once the pupils had completed their planning, had generated key-words, had found the necessary Dewey numbers, and had had their first tentative attempts to gather the relevant information, I observed them in the next stage of the research process: tracing and locating individual sources; examining, selecting and rejecting individual resources; recording and storing information. Again, I defined what I would accept as evidence of metacognition and this focused my data collection. I looked for verifiable evidence that pupils could consciously monitor whether their library research skills had improved. In this stage of the research process I found that the pupils could reflect on their ability not only to collect information, but also to select from found sources and to store selected relevant information. I did not feel that it was necessary for pupils to reflect on all of the sub-skills of this stage of the research process before it could be said that they had engaged in metacognition. However, I felt that the number of sub-skills on which the pupils reflected gave some indication of their level of engagement.

4.5.2 All of the lessons during this stage of the pupils' work were held in the school library. The pupils worked through the relevant Study Cards which led them through the information retrieval strategies. The pupils were able to obtain help from their tutorial group, the school librarian and myself.

4.5.3 I allocated ten minutes at the end of each lesson for the pupils to make entries in their log-books.

4.5.4 During this stage of the research I conducted one tutorial with each tutorial group. I was able to take each group out of the library into an adjacent "Careers Library" so that the tutorials could be conducted in some comfort and in quiet surroundings. I began each of the tutorials by asking each pupil to tell me what they had done so far. Their accounts of their progress dictated the direction of the rest of the session.

- (a) It was sometimes possible to discuss problems that were identified.
- (b) Occasionally I asked additional questions to clarify things, or to help the pupils' clarify their thoughts.
- (c) I raised issues which I considered were important but which they did not raise.

4.5.5 Amongst the issues I explored at this stage were the issues identified in Stage One, paragraph 4.2.12, and so if these issues were not raised by the pupils themselves I introduced them into the discussion.

4.5.6 Whilst I did not want the discussions to become scripted interviews I prepared the following list of issues which I wanted to be raised. I ticked the issues off the list as the pupils' raised them and then I introduced the issues that they did not raise.

- (a) Whether pupils had problems with the Study Pack;
- (b) How far pupils were motivated in the research subjects;
- (c) How far the pupils were motivated in the process of library research;
- (d) How far the pupils were adversely or beneficially affected by previous

project work;

(e) How valuable the pupils felt the research process was;

(f) How far the pupils felt that their information retrieval skills had improved.

4.5.7 From these tutorials it was possible to identify the following issues which helped to focus my attention during the subsequent stages of the research:

(a) The tutorial groups were successfully supporting their members.

(b) Some pupils would not produce successful research projects because they were not motivated in either the subjects they chose or the process of library research.

(c) During the tutorial sessions it was possible for the teacher to identify and address problems that the pupils had.

4.5.8 My observations at this stage of the pupils' work provided interesting data because I was genuinely "inside" the research. The data I was able to collect in this position were most valuable because they were

(a) always specific to individuals and not too general in nature;

(b) data influenced largely by the pupils' concerns rather than my own possible prejudices.

4.5.9 It was possible to identify two stages in my recording of data. Wherever I was in the library I carried a notebook with me which allowed me to write down words or phrases which would help me recall, later, significant details of the lesson. These notes would be incomprehensible to others, and were largely incomprehensible to me months after they were recorded. As soon after the lesson as possible I converted these notes into continuous prose. Sometimes I was able to do this at school during the same day, and I never left it longer than the same evening. An example from my notebook illustrates this. I expanded " John further resources, indep. 3." to:

"John had been struggling last lesson to locate sources from his recorded Dewey numbers. I was pleased to see how industriously he worked today. He found three books, without any help. He clearly understands how to do it now."

4.5.10 Tutorials were far more complicated to record. I considered tape-recording each tutorial, the transcripts of which would provide valuable records of the discussions. However, I decided against this for the following reasons.

- (a) the technology we had available was so primitive that I found it very difficult to distinguish individual pupils' voices;
- (b) the tape-recorder proved to be a distraction. Pupils were reluctant to talk when it was switched on, and they also felt obliged to speak in Standard English which distracted them even further.

4.5.11 I used the same technique to record the tutorials as I did to record my classroom observations: brief notes which I developed later in the day.

I found that although I was not always able to record the exact words used by pupils, I was able to record key phrases. This method of data collection also made later analysis of the data easier than transcripts of taped conversations.

4.5.12 The data I obtained while observing the pupils and conducting tutorials provided me with insights into the pupils' engagement in metacognition. However, it became clear that although I was obtaining valuable data at an individual, personal level, I was not getting a very good overview of the class's behaviour. For this reason I engaged the help of two other teachers and a Year 11 pupil.

4.5.13 I spent a thirty minute period with each of the teachers explaining the mechanics of the Study Pack and the aims of my research. They were both interested enough to help me with my observation, and to share their opinions with me. One of the teachers, Mike, was a Special Needs teacher, timetabled for one lesson a week to help one of the less able pupils. I asked him to record as much as he thought was relevant in relation to the individual child and the rest of the class. The other teacher, Sue, was a member of the English Department. Immediately before the period of my research she had used the Study Pack with two classes, a Year 8 class and a Year 9 class. She also offered to observe two of my library lessons. I asked her to reflect on her experience with the pack, and then to compare and contrast that with the observations she made of my library lessons.

4.5.14 The observations that these teachers made were different from mine as they were more general in nature, while mine were very pupil specific.

However, the two teachers were able to provide valuable data about pupils' motivation, the amount of time the pupils were engaged on-task during lessons, and about pupils who they felt were not working successfully.

4.5.15 Sue's observations about her own use of the Study Pack with two classes also produced some very interesting data. Again, this was of a general nature, referring in most cases to pupils' motivation and the level of their engagement with the research process.

4.5.16 None of the data provided by the two teacher observers contradicted my own data, nor did it encourage me to change any of my foci. However, their observations made a valuable contribution to my overview of the pupils' behaviour and confirmed many of my own observations at this level.

4.5.17 I also asked a Year 11 pupil to spend a lesson in the library taking photographs of the pupils working in the hope that the photographs would provide more data with which to build up an overview of the class's behaviour. Unfortunately, the pupils in the class showed off in front of the camera and so the photographs were not a true reflection of the class at work. However, some data were provided about the supportive nature of the tutorial groups and the variety of sources used by the pupils. The photographs also helped to confirm that there was a very positive working atmosphere in the library. The photographs provided interesting confirmation of things observed by myself and the other observers, but did not provide any additional data. Because of this, and the disruption the taking of them caused I did not repeat this exercise. However, it is clear

that still photographs have an important role to play in the validating of observed behaviour.

4.5.18 Stage Two of the pupils' work, the collecting of information, lasted three weeks. After seven seventy minute library lessons most of the pupils had completed their information collection, and some were wasting time, being reluctant to move on to the writing up of their research. Because I was concerned that the pupils could lose interest in their work if this stage of the process became too protracted, I warned the pupils after seven library lessons that they had two more left for research and then they had to begin writing up their findings.

STAGE THREE: writing up of their projects.

4.6.1 All of the lessons during this stage of the pupils' work took place in the classroom. I prescribed a three week period in which to write up their research projects. Experience suggested that pupils work better if they are given a clear deadline before they begin tasks, and I felt that if, in this case, the pupils were given a longer period than three weeks many of the pupils would lose interest in their writing. This time-scale proved to be appropriate for nearly all of the pupils. However, one pupil finished after two weeks while two pupils negotiated an extra week in which to work on their projects in their own time.

4.6.2 For many of the pupils the writing up of their projects was the most difficult part of the research process. However, it also became the most satisfying for many of the pupils who were immensely pleased that they had

restructured their notes and consciously written in an appropriate style for a specified audience for the first time.

4.6.3 During this stage of the pupils' work I conducted a tutorial with each group. In these tutorials I helped the pupils reflect on the decisions they had made about style and presentation. I also raised the issue of the relationship between their notes and the structure of their projects to emphasise that they would need to restructure their notes if they were to produce a logically structured piece of writing.

4.6.4 My own observations at this stage tended to focus on the ease or difficulty pupils had with the writing up of their research. Because I was exploring how far the pupils could work independently on the research process I did not involve myself in the pupils' writing to the same extent that I would normally have done. Under normal circumstances the pupils would have expected me to respond to their first drafts at least once a week. During this research, however, I involved myself:

- (a) if pupils were clearly stuck and could not progress without some help;
- (b) if pupils asked me for help;
- (c) through the tutorial discussion;
- (d) with brief observations while I looked at pupils' progress;
- (e) with encouragement.

4.6.5 I felt the pupils' completed projects were the most important data from this stage of their work. They provided me with the most valuable data

about the pupils' writing strategies and the levels of success they had with their writing.

4.6.6 It was not possible to use the teacher observers during this stage of the pupils' work. The Special Needs teacher, Mike, extracted two pupils and worked with them on computers. Sue was unable to provide any more of her time. However, as the pupils spent their time at their desks writing, the teacher observers were less relevant than they were during the library lessons when pupils were constantly moving about, and consequently were difficult to observe.

4.6.7 Once the pupils had completed the write-up of their research projects they were asked to respond to a series of questions which asked how far they thought their research skills had improved as a consequence of following the Study Pack. The responses to these questions provided data about the pupils' perceptions which were then explored in interviews. The tabulated data in figure 4.3 represents only twenty responses from a class of twenty-eight pupils. Four pupils did not complete their English projects and were not available when the pupils responded to the Self-Assessment sheets. Another four pupils did respond to the Self-Assessment sheets after completing their English projects, but had not completed their History projects the previous October. As the data in figure 4.3 compares the use of library research skills in the two situations their responses could not be included in this tabulation.

4.6.8 It can be seen from the pupils' responses that fourteen of the twenty pupils felt that previously they had never reorganised the notes that they

Please don't rush this. Please think carefully before you put ticks anywhere.
Please be as honest as possible.

Look at the list of research skills. Look at the headings of the 2 columns. Put ticks in the appropriate places.

SUMMARY OF TWENTY RESPONSES		
	Already used it before the English project	Used it for the first time while doing the English project (or used it properly
List of key words	3	17
Used the Subject Index	12	8
Reference books	13	6
Newspaper articles	7	3
Magazines	7	5
Local Societies	-	2
Local Libraries	15	2
Television	7	3
Other people	11	5
Check to see if sources were appropriate	11	9
Skimmed and scanned	11	9
Wrote notes in own words	13	7
Reorganised the order of your notes	6	14
Wrote an introduction	10	10
Wrote a conclusion	11	9

Figure 4.3 Responses to the second Study Pack, made by twenty pupils.

had made while engaged in research. My interviews confirmed that this was actually what the pupils felt. They also explored how far the pupils had been able to monitor their own learning and reflect on any improvements they may have made in their research techniques. Although the interviews were trying to find out whether pupils had engaged in metacognition, the nature of the interviews themselves enabled many pupils to engage in metacognition. I felt that as teachers we should provide pupils with opportunities for self-assessment as an integral part of the learning process. Hence, the interviews formed a legitimate form of self assessment and were not an intrusion into the process of learning.

4.6.9 During the interviews I talked to the pupils about the way they had planned, researched and written up their History projects, completed in the previous October, and their English projects. During these discussions each pupil was encouraged to reflect on the value of the research process and their perception of its applicability in the future. I discovered whether or not pupils had engaged in metacognition while learning about the research process and while writing their English projects. I did not accept as conclusive evidence pupils' written comments which suggested that they had reflected on their learning. However, it was possible to check pupils' claims against their log-books, their note-books and their final written projects. I also discovered how far the pupils had reflected on the value of the research process and the quality of the writing they had produced. I did not feel it was necessary for pupils to make totally positive comments about the research process as evidence that they had engaged in metacognition. In fact, constructive, critical comments may have been more readily interpreted as evidence of metacognition than unquestioning support

for the process. Similarly, I did not feel that it could be assumed that a poor piece of written work was evidence that the pupils had not engaged in metacognition. I felt that some pupils could have produced poor pieces of writing but reflected on the reasons for their writing being poor. Above all, I did not feel that I could accept a good piece of written work as evidence on its own that pupils had engaged in metacognition. I felt that it may well have been possible for some pupils to have followed the research process through mechanically, and produced a good piece of writing without reflecting significantly on the quality of their own learning.

4.6.10 Once the pupils had completed the write-up of their research the first of the two stages of my research was completed. The pupils had followed a Study Pack which introduced library research skills, and had in the process engaged in a piece of library research. During this initial stage of my research I had explored (a) how far 14 year old pupils could engage in metacognition while learning library research skills (b) what conditions were likely to aid the pupils in engaging in metacognition and (c) whether it was necessary to engage in metacognition to learn library research skills. It was possible to make the following tentative observations at this stage, which have been given more detailed consideration in Chapter Five.

(a) It is possible for 14 year old pupils to engage in metacognition while learning library research skills.

(b) Less able pupils are less likely to engage in metacognition.

(c) The following conditions helped pupils engage in metacognition:

i working in a group and discussing their work with their peers.

ii being engaged in tutorial discussions with a knowledgeable adult.

(d) There appears to be an association between motivation and metacognition.

(e) It appears from the evidence of this study that the pupils who were not able to engage in metacognition were unable to learn library research skills.

(f) It also appears that some pupils who were able to demonstrate that they had learned the library research skills did engage in metacognition.

(g) However, it cannot be concluded that pupils who engaged in metacognition and learned the library research skills necessarily had their attitudes towards those skills changed. There was evidence that some pupils were able to identify the value of the learned skills but still expressed reluctance to use them in the future.

STAGE FOUR:the transfer task.

4.7.1 Four months after working through the Study Pack on "The Research Process" the same class of pupils was given the transfer task, an RE assignment. They were presented with the following task:

"Imagine you are an agony aunt /uncle for 'Cosmopolitan'. You have received a letter from a seventeen year old, concerning her worries about her best friend who is fourteen weeks' pregnant and knows that the unborn child is handicapped. The letter states that an abortion is desired. Compose your reply."

The pupils watched two related video programmes. They were also provided with two A4 sheets of background information (See Appendix E). Before the

pupils began writing they were given the instruction by their RE teacher, "You can use the library if you want to, to get more information." They were then allowed four hours of class time and four hours of homework time in which to complete the task.

4.7.2 The RE teacher set up this task because he wanted to see how far the pupils were able to explore a moral issue from a Christian point of view. The RE teacher expected the pupils to research the issue thoroughly and to present a detailed Christian perspective. I used the pupils' responses to the RE task to explore (a) how far 14 year old pupils could transfer a learned higher order skill, (b) what association there may be between transfer and metacognition, and (c) if transfer took place what conditions were likely to promote or inhibit transfer.

4.7.3 This RE essay provided an appropriate transfer task as it allowed the pupils to make intelligent or appropriate use of the library research process to solve a problem that was different in nature to that used when they learned the process. There were a number of differences. For example, the English project was completely open ended while the RE essay had the subject matter, audience and style clearly defined. In the RE essay more emphasis was put on the need for pupils to offer opinions and interpretations. In the RE essay the pupils were provided with some initial information. Also, because the RE essay asked the pupils to offer their own opinions, albeit in role as Christians, they were required to use researched material to support or inform their viewpoints. Consequently, for this task it was inappropriate for the pupils to mechanically follow all the stages of the research process. I felt that it was possible to say

that transfer had occurred if the pupils had consciously selected what they considered to be appropriate stages of the research process to solve the problem posed by the RE task.

4.7.4 Research suggested that with university students transfer was most likely to occur if a hint was provided that a particular learned skill was appropriate in a different circumstance (Gick and Holyoak, 1980). However, it has been argued in Chapter Two that if pupils are to be encouraged to transfer knowledge and skills they must be encouraged to make their own decisions about when it is appropriate to transfer knowledge and skills. I consequently wished to explore how far 14 year old pupils could transfer learned library research skills without being provided with an overt hint. As very little research has been carried out into what may constitute a hint to pupils engaged in a transfer task I tried to avoid any conditions which may have provided an overt association with the conditions when the pupils learned the library research skills. Consequently, I did not observe the pupils' behaviour during the transfer task as my presence may have acted as an overt hint. Similarly, I was not able to ask the pupils to keep a log-book of their thoughts while engaged in the transfer task. I obtained my data from the completed tasks, from Self Assessment responses, and from subsequent interviews with the pupils.

4.7.5 The RE teacher allowed the pupils to work on the transfer task largely independently as he wanted to see how far the pupils could tackle on their own a task requiring them to discuss a moral issue. He was also aware that I did not want him to overtly encourage the pupils to use the

library to research the issue. Thus, it was possible to say that those pupils who did use the library had not been pressured into it.

4.7.6 Twenty six of the pupils completed the task by the deadline, while two pupils did not complete the task due to prolonged absence.

4.7.7 I was not involved at any stage of the pupils' work on the transfer task which reduced the amount of data that I was able to collect. In the initial discussions with the RE teacher it was agreed that he would make observations of the pupils' behaviour while they were engaged in the transfer task, but because in the event he felt unable to make any observations, data collection only took place after the pupils had completed the transfer task.

4.7.8 The pupils' completed RE essays consequently became the most important data from which to look for evidence of transfer as they provided some concrete evidence of whether or not the pupils had used any of the library research skills. However, it was also possible that pupils had transferred library research skills but evidence was not present in their RE essays. Consequently, I also asked the pupils to respond to a Self-Assessment sheet which asked them to record which of the stages of the research process they felt they had used in their RE essays. It was possible to add a summary of these responses to the pupils' previous responses to a similar Self-Assessment sheet completed after they had finished their English projects (figure 4.4). Although twenty six pupils responded to the Self-Assessment sheet I have only included in figure 4.4 the results of the twenty pupils whose earlier responses are tabulated in

Please don't rush this. Please think carefully before you put ticks anywhere.
Please be as honest as possible.

Look at the list of research skills. Look at the headings of the 3 columns. Put ticks in the appropriate places.

SUMMARY OF TWENTY RESPONSES			
	Already used it before the English project	Used it for the first time while doing the English project (OR used it properly	Used it while doing my RE essay.
List of key word	3	17	6
Used the Subject Index	12	8	10
Reference books	13	6	13
Newspaper articles	7	3	6
Magazines	7	5	6
Local Societies	-	2	3
Local Libraries	15	2	12
Television	7	3	6
Other people	11	5	7
Check to see if sources were appropriate	11	9	12
Skimmed and scanned	11	9	8
Wrote notes in own words	13	7	11
Reorganised the order of your notes	6	14	13
Wrote an introduction	10	10	10
Wrote a conclusion	11	9	4

Figure 4.4 The responses of twenty pupils after completing the RE essay, combined with the information presented in figure 4.3.

figure 4.3. The combined information from these two Self-Assessment sheets provided data about the pupils' perception of (a) their initial library research skills, (b) their perceived improvements after working through the Study Pack, and (c) how far they thought they had transferred the library research process.

4.7.9 The results of these two Self-Assessment sheets suggest some broad patterns of behaviour in the key areas of planning, checking the appropriateness of sources and the restructuring of notes. I used these generalisations to provide the focus for the subsequent interviews with all the pupils. I identified the following key concerns which I raised during the interviews.

(a) It seemed that there was some limited transfer of the planning skills and so I explored how far the pupils had consciously planned any library research that they did.

(b) Almost half the pupils said that they considered the appropriateness of sources. I explored how far these pupils could say they had been consciously influenced by the Study Pack.

4.7.10 From these interviews it was clear that some pupils felt that they had transferred some library research skills. Any claims that the pupils made about their transfer of skills was checked where possible against the evidence of their completed RE essays. It was also clear from the interviews that I had data which allowed me to make tentative conclusions about some conditions which were likely to promote or inhibit transfer.

Conclusion.

4.8.1 In this chapter I have tried to give a clear account of the research programme. I have outlined the tasks the pupils were asked to tackle and have shown the ways data were collected. I have shown how the data collected at each stage of the research were used to focus attention on the subsequent stages of the research. I feel that as a consequence of this research it has been possible to suggest that fourteen year old pupils can transfer learned library research skills. It has also been possible to suggest conditions which may promote and inhibit transfer of library research skills. The next chapter looks very closely at the data provided by eight specific pupils in order to offer more substantiated observations about transfer and the conditions which promote or inhibit transfer.

Chapter Five.

Analysing Pupils' Work to (a) Find Out Whether Pupils Transferred Library Research Skills, and (b) Identify Conditions Which Influenced Transfer.

Chapter Five: Analysing Pupils' Work to (a) Find Out Whether Pupils Transferred Library Research Skills and (b) Identify Conditions Which Influenced Transfer.

Introduction.

5.1.1 The research literature suggests that pupils need to engage in metacognition if they are to successfully transfer learned skills, but engaging in metacognition does not automatically lead to transfer. This research programme explored the role of metacognition in transfer, but also identified other conditions which may promote and inhibit transfer.

5.1.2 In Chapter Two a definition of transfer is given as:

the intelligent or appropriate use of a higher order skill to solve a subsequent problem of a different nature from that used in the initial problem solving activity.

In Chapter Four it was explained that in this study the higher order skill was library research skills. The transfer task was an essay given to the pupils during Religious Education lessons. They were given the following task:

"Imagine that you are an agony aunt/uncle for 'Cosmopolitan.'
You have received a letter from a seventeen year old concerning her worries about her best friend who is fourteen weeks' pregnant and knows that the unborn child is handicapped. The letter states that an abortion is desired. Compose your reply."

5.1.3 It was also argued in Chapter Four that the RE essay provided an appropriate transfer task as it was so different in nature from the English project. For example, the English project was totally open-ended while in

the RE essay the writing task had been clearly defined and so the pupils' purpose for writing was already defined. Because the transfer task was so different in nature from the original task, pupils could not just work mechanically through the research skills they had already learnt. If they were to show some understanding of library research skills they had to apply them appropriately to the new demands. The pupils' completed RE essays were the most important data from which to look for evidence of transfer as they provided concrete evidence of whether pupils used any library research skills or not. The pupils also responded to a Self Assessment sheet once they had completed the RE essay, which asked questions about their use of library research skills. These data were used to generate questions which I asked a number of the pupils during interviews.

What Can Be Accepted as Evidence That Transfer Took Place?

5.1.4 When searching for evidence of transfer it was necessary to consider pupils' research skills in three different circumstances: (a) before working through the Study Pack, to ascertain the initial level of their research skills; (b) after working through the Study Pack, to ascertain whether their research skills improved; (c) in the transfer task, to ascertain how far, if at all, the research skills were transferred. A History Project, completed before the pupils worked through the Study Pack, helped to provide evidence of their initial research skills. The English project, completed as an integral part of their work with the Study Pack helped to provide evidence of their use of research skills in the supported self-study exercise. An RE essay, which was written after the pupils had

worked through the Study Pack, helped to provide evidence of the application of research skills in the transfer task.

5.1.5 The following library research sub-skills have been identified as the most significant:

- (i) using key words and the Subject Index as part of the planning process;
- (ii) checking the appropriateness of the located sources;
- (iii) the restructuring of notes to present a coherent argument.

Data were found within these sub-skills which allowed distinctions to be made between those pupils who did and did not develop their library research skills while working through the Study Pack. It was within these significant sub-skills that I also chose to explore for evidence of transfer. However, I needed first to consider what could be accepted as "intelligent or appropriate " use of these sub-skills.

Skills Which Could be Considered as Evidence of Transfer.

5.1.6 (i) For the transfer task the pupils were told by their RE teacher that they could use the library to find additional information if they wanted. Intelligent or appropriate use of key words and the Subject Index should have led pupils to effectively plan their literature search. It was expected that they would first list a number of key-words and then look these up in the Subject Index. It was also expected that the pupils' search of the shelves for sources would be constructively directed by their use of

key-words and the Subject Index. Pupils may also have gone beyond the library in their search for sources. The use of these planning skills was explored and evidence of their use was considered to be evidence of transfer.

5.1.7 (ii) It was expected that pupils would only make use of sources that provided information directly relevant to their task. In addition, it was expected that pupils would only make use of material that they understood, and would not randomly copy sections from sources whose language they found too demanding. If pupils used sources in these ways it was considered to be evidence of transfer.

5.1.8 (iii) For the transfer task the pupils were provided with some information on two A4 sheets (See Appendix E). It was expected that they would combine information they had researched with information that had been provided. For the transfer task to be a coherent piece of writing the pupils would need to combine the information from various sources, select, and then restructure it in an appropriate way. It was expected that there would be evidence of some deliberate and intelligent structure in the pupils' writing. The structure of pupils' writing was explored, and evidence of intelligent structuring was considered to be evidence of transfer.

What Can be Accepted as Evidence of Metacognition?

5.1.9 In Chapter Two a definition of metacognition is given as the conscious use of metacognitive knowledge. In Cowan's terms (1990) that is

reflecting on how a task is to be tackled rather than what task is to be tackled. In this context metacognitive knowledge is the children's knowledge about appropriate library research skills and so evidence of metacognition would be evidence of the pupils reflecting on how available library research skills could be used to help them in their RE essay. When looking for evidence of metacognition it was possible to analyse the pupils' performances in two contexts: while they worked through the Study Pack, and their responses to the transfer task.

5.1.10 While the pupils worked through the Study Pack the following data were collected:

- (i) statements made by the pupils in their log-books;
- (ii) comments made by pupils during tutorial sessions;
- (iii) the projects written by the pupils;
- (iv) the pupils' responses to a Self-Assessment sheet.

When the pupils carried out the transfer task the following data were collected:

- (i) the pupils' written essays;
- (ii) the pupils' responses to a Self-Assessment sheet;
- (iii) pupils' comments made during subsequent interviews.

5.1.11 It would be difficult to claim that evidence of metacognition had been found if it had been found in only one of the data. I have inferred that evidence of metacognition had been found while the pupils studied the

Study Pack if it had been found in at least two data and then corroborated by their written projects. Because fewer data were collected in the transfer task I inferred that evidence of metacognition had been found if evidence had been found in at least one data and then corroborated in interview.

5.1.12 Consequently, in general:

(i) I have not accepted pupils' claims to have monitored their cognitive strategies without written evidence of that monitoring.

(ii) I have not claimed evidence of metacognition in the pupils' written projects unless it can be shown from other data that the pupils have consciously monitored the skills in evidence.

5.1.13 It could not be assumed that if there was no written evidence of library research skills having been used that pupils had not engaged in metacognition. Account had to be taken of pupils who had monitored the library research skills they had and decided not to use them. It was more likely that this would happen in the transfer task than while the pupils worked through the Study Pack as in the transfer task the pupils were not directed to use research skills but were left largely to make their own decisions. For those pupils who did not display written evidence of having monitored their library research skills the data obtained through interview became even more significant.

Categorising Pupils to Assist in the Analysis of Their Work.

5.1.14 While analysing how successful the Study Pack was in improving pupils' library research skills it was possible to identify pupils in the following categories:

- (i) pupils who already had relatively sophisticated library research skills;
- (ii) pupils whose library research skills improved;
- (iii) pupils whose library research skills did not significantly improve.

5.1.15 It is now possible to explore how pupils in each of these categories performed in the transfer task. The algorithm, figure 4.2; p.127, illustrates the various research questions which had to be considered:

1. Pupils with library research skills before working through the Study Pack, and who transferred them to the transfer task.
2. Pupils with library research skills before working through the Study Pack, but who did not transfer them to the transfer task.
3. Pupils who initially displayed no evidence of library research skills, and who did not appear to develop any while working through the Study Pack.
4. Pupils who developed research skills while working through the Study Pack, and transferred them to the transfer task.
5. Pupils who developed research skills while working through the Study Pack, but who did not transfer these skills.
6. Pupils who did not show evidence of having research skills, did not show

evidence of developing them while working through the Study Pack, but used them in the transfer task.

5.1.16 This chapter now considers each of the research questions identified in the algorithm to find out (a) What research skills the pupils had before working through the Study Pack, (b) whether pupils improved their library research skills while working through the Study Pack, (c) the role of metacognition in their learning, (d) whether pupils transferred library research skills to the transfer task, and (e) what conditions may have promoted or inhibited transfer of library research skills to the transfer task. Figure 5.1 is a summary of the findings considered in the following sections.

5.1.17 In the discussion of the findings the names used to refer to pupils and teachers are pseudonyms.

5.1.18 A selection of the materials considered in this section have been presented in Appendix F to help illustrate the discussion.

	Evidence of Library research skills before working through the Study Pack.		Evidence of library research skills and engagement in metacognition while working through the Study Pack.					Evidence of engagement in metacognition and transfer of library research skills.		Some reasons why pupils may or may not have transferred library research skills.
	Some	None	Improvement	Engagement in Metacognition	Response to Study Pack	Engaged in Metacognition	Transferred	Did not transfer	Did transfer	
SUE	Information retrieval. Organisation. Own words.		Key words	In all stages	Saw value in it	No	No	Teacher's expectations misunderstood. Status of material provided by teacher.		
JOANNE	Information retrieval. Organisation. Own words.		Key words	In all stages	Saw value in it	No	No	Teacher's expectations misunderstood. Status of material provided by teacher. Nature of the task.		
JOHN		None	None	None	Did not engage with study pack at all.	No	No	Past experience of project work.		Interested in the subject. Aware of the demands of the task.
EMMA		None	Planning of literature search. Organisation.	In all stages.	Enjoyed working through study pack.	Yes	Information retrieval. Organisation. Own words.	Teacher's expectations misunderstood. Status of material provided by the teacher.		Interested in the subject. Aware of the demands of the task.
RACHEL		None	Planning of literature search. Organisation.	In all stages.	Enjoyed working through study pack.	Yes	Information retrieval. Organisation. Own words.	Teacher's expectations misunderstood. Not interested in the task.		Interested in the subject. Aware of the demands of the task.
PETER		None	Key words Organisation	During information retrieval and organisation stages.	Enjoyed working through study pack.	No	No	Teacher's expectations misunderstood. Not interested in the task.		
MANDY		None	Key words Organisation Own words	In all stages.	Enjoyed working through study pack.	Yes	No	Thought teacher had provided sufficient information. Not interested in the task.		
TIM	Information retrieval. Organisation		None	During information retrieval	Found the Study Pack boring.	Yes	Information retrieval. Organisation. Own Words			Aware of the demands of the task. Enjoyed library research.

Figure 5.1 Evidence of library research skills, engagement in metacognition and transfer.

Category One: Pupils With Library Research Skills Before Working Through the Study Pack, and Who Transferred Them to the Transfer Task.

5.2.1 Only one pupil fell into this category: Tim.

(a) Library Research Skills Evident Before Working Through the Study Pack.

5.2.2 In Self-Assessment responses, completed after Tim had worked through the Study Pack, he claimed that he had regularly used all of the library research sub-skills before he had worked through the Study Pack. Evidence provided by his History project, which was completed before he had worked through the Study Pack, suggested that he had successfully used information retrieval skills. In an interview Tim explained that he had chosen as his History project title, "How the Americans Influenced Vietnam". He generated key-words "like President, gunship, things like that" then either looked them up in the Subject Index or traced them through the Indexes of various books. He used a number of sources, including books from the school library, magazines from home and a video. The sources he used were all appropriate.

5.2.3 Although no evidence exists to shed light on the quality of the notes Tim made, the actual project suggests that he relied heavily on copying out sections from the various sources. For example:

"One of the first lessons learnt by a 'rookie chopper jack'

is that , landing under enemy fire is a 'no no' but sometimes it is unavoidable. Even a cold LZ can land hot in seconds."

This style was adopted for most of the project. However, there was a clear structure to the project which suggested an understanding of the issue. An introduction in his own words gives a brief summary of the reasons behind the war, and leads the reader into the rest of the text with the statement that "This project gives a brief resume of the war and its hardships". Three well-structured chapters follow, the first dealing with the problems the Americans had setting up operations in Vietnam, the second dealing with the ground war and the Vietnamese tunnels, and the third dealing with the pressures which finally led to the ending of the conflict. A summary, in Tim's own words, reflects on the legacy of the war.

(b) Library Research Skills Developed While Working Through the Study Pack.

5.2.4 Tim's English project demonstrated all of the same strengths and weaknesses found in his History project. In his log-book he expressed some frustration at having to work through the Study pack because "I know all of this already. It is just slowing me down. I want to get on with my project." In interview he dismissed the pack as "boring" and expressed some surprise that not everyone had the research skills he had. He could not remember ever being taught the research skills he had, but felt that he had always had them. I told him that he put much more effort into researching information than most of the people in the class, and he was pleased with this praise, commenting that:

"I always like to do good work. I like doing projects. It's good fun looking up information in the library. You learn

things."

5.2.5 However, he was generally an unco-operative interviewee, and was not very willing to reflect on the fact that the text of his English project, although organised carefully, was almost entirely copied from existing sources. At first he argued that he had written it in his own words, then conceded that some of it may be "similar" to the sources that he had used. Finally, he shrugged his shoulders to conclude the interview. I interpreted the shrug to mean that either he did not care whether his writing had all been copied, or that he did not wish to pursue the issue further because it was of no consequence to him.

(c) Evidence of Metacognition While Working Through the Study Pack.

5.2.6 Tim was able to explain in interview how he had generated key-words which he said influenced his literature search. These key-words and the appropriate classification numbers were listed in his log-book. The information used in his essay confirmed that the key-words did influence his literature search and helped him find appropriate sources. Consequently, it is possible to say that Tim appeared able to monitor the library research skills which allowed him to organise and carry out an effective literature search. That is, he engaged in metacognition. However, his erroneous claim that his project was written in his own words, and his reluctance to accept the truth, suggests that his monitoring did not go beyond the information retrieval stages of the research process.

(d) Library Skills Evident in the Transfer Task.

5.2.7 In the transfer task, the RE essay, there was further evidence of Tim's ability and willingness to transfer the research skills he had to different tasks. In interview he said that when planning his RE essay he had also used key-words and the Subject Index to organise his literature search. However, he only used two books for extra source material because "It was difficult to find anything helpful from a book because you had to give your own opinions." His RE essay showed a development of his ability to express his ideas in his own words. He used various pieces of information, and organised them in a logical and helpful manner. However, in contrast to the previous two pieces of work considered, he was also able to advance his argument in his own words. Although, whenever he used source material he copied it, a far larger percentage of this essay was in his own words. He did not attribute this to his experience with the Study Pack but to the fact that " You couldn't do it just with the facts. You had to give your own views." I pointed out that he had been asked to do that in his English project but had relied very heavily on the source material then, but he shrugged and said "Was I?"

(e) Conditions Which May Have Promoted or Inhibited Transfer.

5.2.8 (i) It appears that in the transfer task Tim was able to monitor his library research skills more successfully than when he worked through the Study Pack. For example, he consciously used key words to organise his literature search, and the essay he produced was more successful than previous essays he had written because he had adopted a more appropriate

personal style. Hence, there is evidence that he engaged in metacognition and this contributed to the transfer of library research skills.

5.2.9 (ii) Tim's explanation for using a more appropriate style in the transfer task suggests that he was more aware of the demands of the transfer task than he had been of the other tasks considered in this research programme, and consequently he chose an appropriate style. It seems that Tim's increased awareness of the demands of the transfer task promoted the transfer of available library research skills.

5.2.10 (iii) It was clear that Tim had a general desire to produce work of a high quality, and the word-processed presentation of all his work considered in this research programme was a reflection of this concern. It was also clear that he enjoyed researching issues for the intrinsic value of discovering new knowledge. It seems that Tim's high level of motivation in the transfer task promoted the transfer of available library research skills.

Condition Two: Pupils with library research skills before working through the Study Pack, but who did not transfer them to the transfer task.

5.3.1 Two pupils have been identified from within this category: Sue and Joanne.

(a) Library Research Skills Evident Before Working Through the Study Pack.

5.3.2 In Self-Assessment responses after working through the Study Pack, both girls claimed that before they had worked through the Study Pack they had used all of the library research sub-skills except key-words. Their History projects which were completed before they studied the Study Pack supported this claim. For her History project on "Fashion", Joanne had used the Subject Index to find books on pre-1980s fashion, and had used magazines and television programmes to find information about contemporary fashion. Sue had chosen "Chinese Monasteries" as the subject for her History project. Interestingly, Sue gave the following account of the initial stages of her research:

"I looked up 'monasteries' in the Subject Index, and found one or two books. I then looked at the Index at the back of the books to look up 'China' and 'Provinces' and I looked for the names of any of the Chinese monks that I knew."

It seems that although Sue felt that she had not used key-words, in fact she had.

5.3.3 Although each of the girl's History projects was carefully structured, it is not possible to ascertain how consciously the structuring had been carried out. Joanne's structure was dictated by the chronological nature of the subject. Sue's project dealt in discrete chapters with discrete subjects such as particular monks or monasteries, and these subjects were presented chronologically. Interview questions did not shed any additional information about how consciously either of the two pupils had structured their writing.

5.3.4 There was clear evidence, however, that each of the pupils made very conscious efforts to understand the material they had researched, and write it in their own words. An extract from Joanne's project appears:

"The much more sexy look also came into style with clothes becoming more and more revealing, womans clothes developed a great deal and made much more tight."

An extract from Sue's project appears:

"Around 1612 Leun stopped using real swords for it was no longer nessecary for no-one could deffeat him with his Kantana and champion sword, so he then only used his Bokker, but still no-one could get near him."

I tested Sue's understanding of her subject, and was surprised that she could remember many of the characters' names, and the stories associated with the characters.

(b) Library Research Skills Developed While Working Through the Study Pack.

5.3.5 I was not surprised that these two pupils felt that the Study Pack was of limited value to them. They both appreciated the section on key-words, and made use of key-words and the Subject Index in the planning of their English projects. Joanne chose for her English project three questions related to witchcraft, while Sue, after trying very hard to arrive at a question related to her area of interest, eventually gave up and wrote a project on "Miyamoto Musashi. The greatest Samurai warrior ever to live."

5.3.6 There was clear evidence in their English essays that each of the pupils selected appropriate material and consciously restructured their notes before writing them up. Joanne collected a great deal of information from a variety of sources and the notes that appeared in her note-book were not structured at all. However, on the last page of her log-book Joanne identified three sections into which she eventually organised all of her notes. These three sections were in turn organised in a logical manner, focusing on "The History of Witchcraft," "Modern Witchcraft," and "Glossary and Spells." Although occasional paragraphs appeared to have been copied from sources, most of her project was presented in her own words.

5.3.7 Sue also found a great deal of information from a variety of sources, and warned in her introduction, "If some of the information varies its because there is so many different bits/pieces of information so I can not rely on one piece." Sue's writing was largely organised chronologically, as would be expected with a project on a character's life, but she had to give

some thought to sections on "The Philosophy of Kendo" and "A Personal Review of Musashi's Writing." She explained how she resolved this problem:

"I was going to put the bit about the philosophy of Kendo at the beginning of the project, because really that was what Musashi's life was all about. But I put in the chapter on when he was at the Military School because that is when he learnt it.. My review of his book 'Five Rings' (GoRin).. it had to go at the end because it was different. It didn't have much to do with his life. The book did, but my views on it didn't."

As with her History project, Sue managed to write up a large proportion of her English project in her own words.

5.3.8 It is difficult to know how influential the Study Pack was for these two pupils. Both pupils demonstrated sophisticated research skills in their History and English projects, and it would be difficult to argue that there was any evidence of their skills improving as a consequence of the Study Pack. Rather, it would be possible to say that by combining the evidence of both pieces of writing, it can be shown that the two pupils were able to plan a research project carefully, collect information from a variety of sources, and then write up the researched information in their own words after organising it appropriately.

(c) Evidence of Metacognition While Working Through the Study Pack.

5.3.9 Joanne and Sue both consciously used key-words and the Subject Index to plan their literature searches. The key-words and appropriate classification numbers were recorded in their log-books, and the information used in their essays confirmed that the key-words were used to

collect the information used in their essays. Their Self-Assessment responses, which were explored further in interviews, also provided evidence that they had both consciously used available library research skills in planning and executing their literature searches.

5.3.10 There is also evidence that the two pupils consciously restructured their notes and consciously wrote their essays in appropriate styles. Evidence of this was found by comparing the structure of their essays with the order in which their notes appeared. It was confirmed in interview that both pupils consciously monitored available library research skills which led to them making their decisions about the structure and style of their essays.

5.3.11 Although it is difficult to know how influential the Study Pack was for these two pupils, it is possible to show that while engaged in all stages of the library research process both pupils engaged in metacognition.

(d) Library Research Skills Evident in the Transfer Task.

5.3.12 It is similarly difficult to generalise about how far these pupils transferred their research skills to the transfer task. In order to consider this issue it is helpful to distinguish between (i) information retrieval skills and (ii) the way the pupils processed information. Each of these issues can then be considered separately.

(i) Information Retrieval Skills Evident in the Transfer Task.

5.3.13 Although both of these pupils were hard-working and enthusiastic, for their RE essay neither of them engaged in research to obtain information beyond that provided by the teacher. There was no evidence of transfer of information retrieval skills. Sue admitted that "When doing this work I did not give my English project thought..." and Joanne conceded that "I didn't really give the english project a thought..." Because these pupils had demonstrated information retrieval skills in both their History and English projects these responses initially seemed to suggest that they were able to transfer information retrieval skills to "Project work" in which the research processes involved were very similar, but could not transfer them to an essay where the same research processes could not be mechanically used. Further investigation however provided interesting information.

5.3.14 Joanne had not interpreted the teacher's comment that they 'could' research more information to mean that they were 'expected' to research more information. In an attempt to find out how she would have planned her research if she had done some, I asked her how she would find information about "criteria referenced tests." She replied confidently that she would use appropriate key-words, or "use the dictionary to find similar words to look up." This reply suggested that Joanne had internalised the process recommended in the Study Pack but that the RE teacher had not made his expectations clear enough for Joanne to engage in some research. Joanne also said, referring to the subject of the RE essay, "I knew it....I couldn't think of anything to look up." This response also suggests that

Joanne had not clearly understood the teacher's expectations as she had shown that she had the skills required to find additional information if she had realised what was expected of her. Her response also suggests that because of the nature of the task, which required a great deal of personal interpretation, Joanne did not associate it with a task which required additional research.

5.3.15 When Sue was asked why she had not researched additional information, she responded in a similar fashion to Joanne saying, "I couldn't see the need to look for additional information." She also said she would use key-words and the Subject Index if she had to find information on "criteria referenced tests." This suggests that Sue also had the necessary skills to research information if she had realised that it was expected of her. However, Sue's response also raises questions about the perceived status of the information provided by the teacher as it appears that she felt that the information provided by the teacher was all that was necessary to answer the question. Again, the teacher's expectations had been misunderstood.

(ii) Processing of Information in the Transfer Task.

5.3.16 Although Joanne had not researched any information herself, she used six pieces of information provided by the teacher, and integrated them successfully into her own essay. She structured this information logically to present a persuasive argument, and put a great deal of effort into writing the information in her own words. Although Joanne had not researched any additional information for her essay, which initially

suggested that her research skills had not transferred, there is evidence that her ability to process information was transferred.

5.3.17 Sue did not research any information herself, but she did not even use any of the information provided by the teacher. She produced a very shallow piece of writing which dealt very vaguely with the issues raised. As Sue did not use any factual information in her essay there was no evidence of any processing of information.

(e) Conditions Which May Have Promoted or Inhibited Transfer.

5.3.18 It was clear that Joanne and Sue both had the appropriate library research skills necessary to carry out a successful literature search. However, they failed to use these skills in the transfer task.

5.3.19 (i) While writing their RE essays neither of these pupils recalled any of the experiences they had had while working through the Study Pack. That is, they failed to monitor available skills: failed to engage in metacognition. It was not that they had considered the available cognitive skills and chosen not to use them, which would have been evidence of metacognition, but they failed to recall these skills at all. It seems that failing to engage in metacognition inhibited the transfer of information retrieval skills.

5.3.20 (ii) Joanne's processing of the information provided by the teacher suggested that she had transferred information processing skills, but had not done so consciously. This evidence suggests that it is possible to

transfer some aspects of library research skills without engaging in metacognition.

5.3.21 (iii) Neither of these pupils understood that the teacher expected them to carry out library research for their RE essays. Their perception of the demands of the task inhibited the potential transfer of available skills.

5.3.22 (iv) The pupils felt that the information the teacher provided was sufficient to answer the question. The perceived status of this information inhibited transfer of available skills.

Category Three: Pupils who initially displayed no evidence of library research skills, and who did not appear to develop any while working through the Study Pack.

5.4.1 Four pupils can be identified in this category, but it is only possible to consider the progress of one of these pupils. Three of the pupils in this category had received Special Needs Assistance since they arrived at the school. They did not complete their History projects. Even with Special Needs Assistance they did not benefit from the Study Pack. Their English Projects were incomplete, and the limited work they did was of a very poor quality. The Special Needs Assistant located a book for each of these pupils and the pupils copied pictures and text onto file paper. In retrospect, the reading demands of the Study Pack, and the intellectual demands of library research skills seem to have been beyond these pupils' abilities. One of these pupils was expelled before the transfer task was tackled, and neither of the other two completed the transfer task. However, it is possible to consider the work of one of the four pupils, John.

(a) Library Research Skills Evident Before Working Through the Study Pack.

John did not complete his History project, prior to working through the Study Pack, and so there is no evidence of the library research skills he may have had before he worked through the Study Pack.

(b) Library Research Skills Developed While Working Through the Study Pack.

5.4.2 The difficulties of analysing John's experience lie in the difference between what actually happened, and his perception of what happened.

Although he felt that he had successfully worked through the Study Pack, and had incorporated the various steps into his own research, there is absolutely no evidence from his log-book or his English Project that he had even read the Study Pack.

5.4.3 Early entries in John's log-book reported that "I have no problems so far I got the books that I need" and "I have thought of a question like you said ...I am having no problems whatsoever." However, John did not arrive at a question to research, even after being provided with help. His area of interest was too general, "The Guinness Book of Records", but even here he could not understand that a research question could have been tackled. He worked very hard, and enthusiastically, copying out entries from various editions of the 'Guinness Book of Records'. He was pleased with his information gathering, and recorded that "I have got all the information that I need because I brought some of my books from home to school." Because of the nature of his project he could not engage in any further research. His finished project was divided into sections on the Tallest, the Fastest, the Oldest, and the Longest. Each section consisted of a number of entries copied straight out of the various editions of 'The Guinness Book of Records' with no attempt to write anything in his own words, and no attempt to offer any commentary or analysis.

5.4.4 John's Self-Assessment responses claimed that he had actually gone

through every single step of the research process and had felt either "Confident" or "Very Confident" about using each of the steps. He also claimed that before he had worked through the Study Pack he had regularly used all of the research sub-skills except key-words. He claimed to have written all of his English project in his own words.

5.4.5 I had talked to John a number of times while he had been planning his English project, and had tried to redirect his energies to a research task that was more demanding. When he was collecting information, and when he was writing it up, I discussed the difference between writing in his own words, and copying information. Whenever I talked to him he was very co-operative, and appeared to understand what we had been talking about, but I failed to influence him at all. In an interview conducted after John had completed his English Project, he expressed great satisfaction with the results, saying, "I really enjoyed this project because it was a project that I was interested in." When I questioned him about the disparity between the evidence in the project and the claims he made in his Self-Assessment, he was bemused. He offered comments like "But I did do all of those things" and "I thought I did that."

5.4.6 It is difficult to account for the failure to influence John into using any of the various research sub-skills, and it is more difficult to explain why he felt that he had used them even when he was faced with the evidence that he had not. I felt sure that he had the intellectual capacity to cope with the Study Pack, and to understand the concept of library research. It may be that past experience of "project work" had led him to believe that what he produced was satisfactory. It may have been that his

single-minded desire to produce a project about "records" blinded him from the real demands of library research.

(c) Evidence of Metacognition While Working Through the Study Pack.

5.4.7 This case illustrates the importance of collecting data from a variety of sources when looking for evidence of metacognition. Although in his Self-Assessment responses, and in interview, John expressed the view that he had carried out a good piece of library research, it is clear that he completely failed to monitor his work. John did not exhibit any understanding of the differences between the process he claimed to have followed and the process he actually followed.

(d) Library Research Skills Evident in the Transfer Task.

5.4.8 The RE essay John produced for the transfer task did not display any evidence of his use of research skills. He did not research any information additional to that provided by the teacher. He responded that "I didn't need any more information. Mr. Jones had given us enough on his sheets." In his essay he used two pieces of the information provided by the teacher. His essay began with 200 words of very personal writing defending a woman's right to have an abortion followed by the two pieces of information, about "the Abortion Law" and "Development of the Foetus." The essay finished abruptly after these pieces of information. The pieces of information that he used were not integrated into his essay at all, and were copied from the sheets provided. There was no evidence that John was able to use the information provided effectively, nor that he understood why he had

included the information in his essay. In interview he commented that "Mr. Jones wanted us to use his information. We had to put some of it in the essay." When asked why he had chosen the particular information he had, and why he had put it where he had in the essay, he could not answer.

(e) Conditions Which May Have Promoted or Inhibited Transfer.

5.4.9 (i) It had not been expected that John would exhibit any ability to monitor his use of library research skills in the transfer task as he had not used the library research skills while studying the Study Pack. However, it was always a possibility that he would have demonstrated skills in the transfer task that had previously not been in evidence, although this was not the case. In addition, his RE essay, his Self-Assessment responses and interview data all suggested that John did not engage in metacognition in the transfer task. It may be inferred that transfer was unlikely to occur.

5.4.10 (ii) If John had had library research skills that he had not previously used, the fact that he felt the information provided by the teacher was sufficient to answer the question would most likely have inhibited any potential transfer.

Category Four: Pupils who developed research skills while working through the Study Pack, and transferred them to the transfer task.

5.5.1 Two pupils have been identified from within this category: Emma and Rachel.

(a) Library Research Skills Evident Before Working Through the Study Pack.

5.5.2 Rachel's History project, completed before she worked through the Study Pack, was an example of what is worst in project work in schools. She produced a 42 page project on "History Through the Post" and the teacher responded "This is an absolutely brilliant project - Excellent use of sources. Extremely well researched." Rachel had used two books from the school library, and had various pamphlets and leaflets obtained by writing to three organisations. Her extensive project was very attractively presented, with First Day Covers, illustrations, actual stamps to illustrate what she was writing about, and a great deal of writing on many related subjects. The Contents Page listed 33 different chapters. Obviously this piece of work had taken many hours to produce. However, there was very little evidence of any genuine thought going into the project. Although the extensive number of chapters was commendable, there was very little structure in the project or selection of material. All of the text was copied from the various sources, with absolutely no attempt to write anything in her own words.

5.5.3 Emma's approach to her History project suggested that she had limited research skills prior to working through the Study Pack. She chose as her subject "The Royal Family", and obtained all of her sources from one magazine, and two books found for her by the librarian. Her project was a series of sections about past kings and queens, copied from the two books she had, and illustrated with pictures of the present Royal Family. Structure was provided by the chronological nature of the project, but it was not possible to ascertain how conscious this organisation was.

(b) Library Research Skills Developed While Working Through the Study Pack.

5.5.4 Rachel said in interview that she enjoyed working through the Study Pack, and there is evidence that she benefited from it. She chose as her research question, "How is Space Different From Earth?" and used key-words and the Subject Index effectively to plan her literature search. She used five books, a magazine, and a set of encyclopedias. All of the sources she used were appropriate. Her initial responses to her work, recorded in her log-book, were positive. For example, she said "I found the work we did today easy. All you had to do was follow what was written on the card." She also worked very thoroughly through the Study Pack, recording at one stage that "In this lesson I had to go back and repeat half of Step 3 that I had forgotten to do before I could continue with my research." However, as with her History project, Rachel found difficulty selecting from the material that she accumulated. She commented, while writing up her notes, "I am getting really bored with this project and seem to be writing less and less about each planet."

5.5.5 In her project Rachel failed to tackle the research question she set herself, and instead copied out information about various planets and other astrological issues from the sources that she identified. There was no effort made to write any of this information in her own words. However, some logical thought had gone into the restructuring of her notes before they were written up for the project.

5.5.6 In Self-Assessment responses, completed after she had written her English project, Rachel recorded that she felt she had used many of the research sub-skills before working through the Study Pack, but that she had not before used key-words as part of a planning strategy. Nor had she ever previously restructured her notes while writing a project. These responses corroborated the evidence of her History project and her English project that literature research skills and the logical restructuring of notes were skills that Rachel developed while working through the Study Pack.

5.5.7 Emma first chose for the subject of her English project "Children's Television" but after some discussion with me about a research question to tackle she changed her focus to "How are TV programmes produced and broadcast?" Her limited research skills caused her some initial frustration and she had a great deal of difficulty planning any strategy for starting a literature search. As she knew so little about the subject she found it difficult to generate any key-words. However, after some further discussion with me she produced some key-words and reported in her log "..then I looked in the Subject Index and looked at each of the headings and found quite a bit." Once she was happy with the amount of information she had found I asked her how valuable she thought the use of keywords and the

Subject Index were and she replied, " It's OK if you had a long project, but it took too long." She developed this further, expressing her realisation that the topic she had chosen caused some of the difficulties and added, "I wouldn't of got nowhere if I hadn't had to think about it would I?" At this stage it was difficult for me to judge whether Emma's positive responses were sincere or whether she was offering me the answers she predicted I wanted. However, subsequent evidence, considered below, suggested that she had in fact judged the technique to have been valuable.

5.5.8 Emma wrote fifteen pages of notes in her exercise book. Early notes were in her own words, but notes after page six degenerated into copying. The notes were restructured before they were copied up for the final draft, but the text itself was almost unchanged. All of the material she used was appropriate.

5.5.9 In Emma's Self-Assessment responses she recorded that she felt she had absolutely no research skills before she worked through the Study Pack. However, after completing her English project she recorded that she felt "Confident" about collecting information and "OK" about writing notes and restructuring them. I followed up these responses in an interview. Emma could not remember any time that she had been taught library research skills and said that except for her History project she could not remember any time she had been required to find information from the library. She volunteered the view that if she had been asked to find any information she would have asked the librarian because she would not have known where to begin looking.

5.5.10 I reminded her that she had only used three sources for her History project, two of them found by the librarian, whereas in her English project she had found five different sources herself. When asked why she had used more sources for her English project, particularly as they had been so hard to locate, she replied, "I knew that I could keep Mrs. Smith happy with two books and a magazine. You wanted me to use more didn't you?" This comment suggested that the quality of Emma's research would in the future be governed by her judgement of teachers' expectations. However, evidence that she appreciated the intrinsic value of using extensive source material was suggested when she said that she felt most pleased with her English project because she had created something new, and that her project was now the best source in school on the creation and broadcasting of television programmes.

5.5.11 I asked her about her apparent lack of confidence about writing in her own words and restructuring her notes. She said that she had not recorded a response of "Confident" about these skills because she realised that she had not been very successful in using them during her English project. She said, "I wish I had done more in my own words because it looks better....but it's difficult... You haven't got enough time...But I did sort the order OK...I found out about the way TV is sent out first, but I put that bit after how the programmes are made...because...that's the order things happen isn't it."

5.5.12 Finally, I asked her how she would set about answering the question "How are roads constructed?" She replied, "I would look up roads in the Subject Index and start from there." When she was asked how she would

tackle the problem if "Roads" did not appear in the Subject Index she replied, "I would...think of similar words...like...tar, motorway... construction... things like that." When Emma had earlier expressed some appreciation of the Planning techniques recommended in the Study Pack I had not been entirely convinced about the sincerity of her response. However, in this interview, conducted after her English project had been completed, and a long time after she had been engaged in the planning stage of the project, I felt that she was being sincere. The apparent ease with which she responded to the question suggested that she had reflected on her previous lack of research skills, had valued the Planning techniques recommended in the Study Pack, and had accepted them as techniques worthy of consideration in the future.

(c) Evidence of Metacognition While Working Through the Study Pack.

5.5.13 Rachel recorded in a Self-Assessment response that she appreciated the value of the research skills introduced by the Study Pack. Her conscious repetition of a stage of the Information Gathering stages illustrated that she was monitoring her use of cognitive skills. Her English project showed that she had restructured her notes in order to present her argument. In interview she said that this had been done consciously, and she was aware that this was the very first time that she had restructured notes made for an essay. Clearly Rachel engaged in metacognition.

5.5.14 There was a great deal of evidence that Emma also engaged in metacognition. She recorded in her log-book, and made the point later in an

interview, that she was pleased with the way key-words and the Subject Index had helped her find information. She also recorded in her Self-Assessment responses that she was pleased with the information retrieval skills she had learnt while working through the Study Pack.

5.5.15 Rachel produced an impressive piece of writing in the transfer task demonstrating that she transferred her library research skills to satisfy the demands of the task. She supplemented the material provided by the teacher with material found through a piece of well organised research. She began by looking up "Abortion" in the Subject Index, but had to generate her own key-words because the word did not appear. She found information in three books.

5.5.16 The introductory paragraph of Rachel's essay showed how carefully she had structured her answer and so organised all the information she had:

"Your friend should consider all the options before she makes her final decision. 1. She can give birth to the baby and have it adopted. 2. She can have an abortion. 3. She can have the baby and care for it herself."

Rachel then used this structure to present the various arguments, incorporating twelve different pieces of information from the various sources. The information used in the essay was all appropriate. All of the essay was written in Rachel's own words, including the information she used from the various sources.

5.5.17 Rachel's Self-Assessment responses, which were completed after writing her RE essay, suggested that she consciously used the research

skills evident in her RE essay. She responded that she had used key-words and had restructured her notes for the first time in her English project, but had also used these skills in her RE essay. She also responded that she was much happier about writing up her notes in her own words. I explored these responses further in an interview. When I asked why she had researched additional information for her RE essay beyond that provided by the RE teacher she replied, "I was really interested in this subject. I wanted to read more about it. I thought I could find more interesting stuff than Mr. Jones had given us." She said that she had begun her literature search by using the Subject Index, but when she could not find "Abortion" she recalled the use of key-words in her English project and so tried that successfully. I complimented her on the style of her RE essay and the fact that it had been written in her own words, and reminded her that most of her English essay had been copied from various sources. She replied:

"This essay wanted your own opinions. You had to say what you felt, but use facts as well... I found writing my own opinions quite easy after I had read all the information. When I came to use the facts I remembered that you had moaned at me for copying too much for my English project. So, I tried not to this time."

5.5.18 Emma felt that she had used key-words and the Subject Index effectively to plan the library research for her RE essay. She also felt that she had considered the appropriateness of the sources she had found, and made notes in her own words. She felt that she had structured these notes effectively to present a logical argument. On the surface these responses suggested that Emma had effectively transferred the library research skills she learnt while working through the Study Pack. However, the evidence provided by her essay led me to question some of these

responses.

5.5.19 Emma completed most of the research for her RE essay at the public library. This was because she had noticed that during the research stage of the English projects many pupils had difficulty finding sufficient information and the public library was much bigger than the school library. She had begun planning her research by listing key-words such as "abortion", "unborn baby", and Abortion Act". She then looked up these key-words in the Subject Index which enabled her to locate three relevant books. She said that she read the appropriate sections of these books, and made notes in her own words. Unfortunately, there is no evidence of these notes.

5.5.20 It was difficult to resolve the evidence of Emma's essay with her account of her library research. Although she claimed to have found source material from the public library, all of the material she used in her essay had been provided by the teacher. I had no reason to suspect that Emma was not telling the truth about her research, as she had no reason to lie, and the details she gave me were very elaborate and convincing. This issue was explored in an interview. Emma had been pleased with the fact that she had bothered to use the library, and was pleased with the quality of the information she had found. However, she said that when she began to write her essay and tried to combine the information she found with information she had been provided with she began to have doubts about the status of her own information. She said, "I felt that the stuff on the sheets was what Mr. Jones wanted me to use." I questioned this assumption as the teacher had told them that they could use the library if they wished, and Emma had

used the library. However, because Emma had not felt that the instructions had been stressed forcefully enough she doubted the teacher's actual expectations; she did not really believe that additional information was necessary. Consequently, she questioned the status of the material she had researched and finally relied entirely on the material provided by the teacher.

5.5.21 In her essay Emma used seven of the twenty extracts on the two A4 sheets of information provided by the teacher. Each of the extracts she used appeared in her essay copied verbatim from the sheets rather than presented in her own words. However, there was evidence of Emma trying to integrate the sources into her own text. Her essay began, "Dear Cathy, the abortion act of 1967 says..." and then presented the seven sources that she had selected as seven separate paragraphs. Each of the paragraphs was numbered and the sources acknowledged. The essay concluded, "These seven phrases might be of some use to your friend..." and then provided advice that abortion was wrong and that the friend should consider adoption. When I asked Emma why she had not tried to present the information in her own words she replied, "But they were the facts. I didn't want to get them wrong."

5.5.22 It appears to be significant that Emma failed to write both her English project and her RE essay in her own words. Although she said about her English project that she wished she had written up more in her own words, it appears that Emma found this skill very difficult to master. It may also be that she had too much respect for printed material and not enough confidence in her own ability to interpret and explain what she had

read.

5.5.23 There was clear evidence in Emma's RE essay that she had consciously structured the source material that she used. The paragraphs of her essay followed a structure of alternate paragraphs in favour of abortion, each being followed by a paragraph against abortion. Although there was not enough of her own writing to link the material together, Emma had tried to use the material to present and then dismiss the pro-abortion argument. She said, "What I did was to give an argument for abortion and then prove it wrong each time." Her essay finished with the advice that abortion was wrong. In the evaluation of her English project Emma had said that it was the first time that she had ever structured source material in a piece of writing she had done, a view corroborated in part by her History project. It seems significant that in her RE essay although she resorted to copying she had again been able to organise the source material to structure her argument.

(e) Conditions Which May Have Promoted or Inhibited Transfer.

5.5.24 (i) That Rachel began planning her literature search with the Subject Index but had to go back a step in the research process to generate key-words suggested that she was able to monitor her library research skills. This was verified in interview where she said that during the transfer task she was conscious of the research strategy introduced in the Study Pack. Her RE essay showed that she restructured her notes and chose an appropriate style. Her Self-Assessment responses and responses in interview confirmed that she consciously made these decisions. She said

that these decisions were influenced by her experience of the Study Pack and by the nature of the transfer task. Emma also consciously used the library research skills introduced by the Study Pack to collect relevant information for her RE essay. Interview data and written evidence showed that she had consciously structured her essay in order to develop her argument. Clearly, Rachel and Emma engaged in metacognition and this promoted their transfer of available library research skills.

5.5.25 (ii) Although Emma engaged in metacognition and transferred available library research skills, her perception of the teacher's expectations was more influential than her belief that she had conducted some valuable and relevant research. This failure to use the information she researched was in part because she misunderstood the teacher's expectations.

5.5.26 (iii) There was evidence that Rachel's interest in the subject of the transfer task promoted her transfer of library research skills.

Category Five: Pupils who developed research skills while working through the Study Pack, but who did not transfer these skills.

5.6.1 Two pupils have been identified from within this category: Peter and Mandy.

(a) Library Research Skills Evident Before Working Through the Study Pack.

5.6.2 For Peter's History project, completed before he worked through the Study Pack, he chose the subject of "Dinosaurs." Although he claimed in later Self-Assessment responses to have sophisticated library research skills none were evident in this project. He admitted in a subsequent interview to stumbling on a book about dinosaurs while haphazardly scanning the library shelves. His project amounted to the copying out of various sections of the one book. There was no conscious structuring of any information; he just copied out information in the order it appeared in the book. There were no illustrations or any other attempt to make this piece of writing interesting. In an interview he made the point that:

"I didn't know what to do it on. It had to be the history of something but I didn't know what to do it on. I found this book on dinosaurs and decided to do that."

It was difficult to obtain any further information about the level of Peter's motivation during the writing of this project as he found it

difficult to recall doing it. In fact, he initially recalled producing a project on the "Hypocratic Oath" and had to be reminded of the actual subject of his History project.

5.6.3 The subject of Mandy's History project, completed before she worked through the Study Pack, was "The History of Medicine." She had obtained the information for this project by using an encyclopedia, and by locating two books by following the Dewey Classification Labels located at the end of the School Library shelves. She also used leaflets she had as a consequence of her membership of the "Red Cross."

5.6.4 Mandy's History project was a very thorough piece of work, which presented a great deal of information in an attractive way. There were many illustrations and diagrams. However, there was no attempt to write the material in her own words, nor to structure the material she included. In an interview she said, "I didn't even think of that. I thought I had lots of information, and I just used the interesting bits." She felt that she had written up the project in her own words and when it was pointed out to her that she had not she could not account for it.

(b) Library Research Skills Developed While Working Through the Study Pack.

5.6.5 Although there was very limited evidence in Peter's English project that he had developed library research skills while working through the Study Pack, it appeared that he did benefit to a limited extent. He began with the research question "How can you make safer Formula One racing circuits?" He used the three key-words "racing," "motor cars" and "circuit

racings" and found four books from the school library. He also claimed in his log-book to have used newspapers and television although there was no evidence of this. In Self-Assessment responses he said that he had not before used key-words and so it seems that this was one skill he used because he had worked through the Study Pack. In the early stages of his English Project he recorded in his log-book that he had enjoyed working through the Study Pack, saying that "I didn't encounter any problems this lesson but I nearly managed to get a clearer idea of how to go about setting out my work." He meant by this comment that he had come to some conclusions about the structure his project should take. However, once he had found his sources he lost interest in the research process and only wanted to write as much information as possible. He complained in a later log-book entry that, "I think my work is coming on well but I find it is a slow process. I wish you could speed it up somehow."

5.6.6 Peter did try to organise the information that he collected for his English project into some sort of structure. He began with some early history of motor racing and then worked through the safety of racing cars, the mechanics of the racing car and then driving techniques. In an interview I asked him about the structure of his project and he said that "I had to put the bit about the history at the start. I couldn't decide which to put next, safety or how they worked. The bit about how to ride them had to come after you knew something about them." Although the structure of Peter's project may be criticised there is evidence of conscious decision making in the final structure, and evidence that Peter appreciated that some structure was necessary.

5.6.7 Peter made no attempt in his English project to write up any of the information in his own words, although in his Self-Assessment responses and in responses during an interview he claimed that he had. Clearly, he did not understand the demands of writing up researched information in his own words.

5.6.8 There was an impressive improvement in Mandy's library research skills after working through the Study Pack. She chose as her subject, "Is there such a thing as a totally green person?" She used key-words and the Subject Index to locate eight different subject locations in the library where she could find relevant information, and she finally used four books, three pamphlets and a television programme. In her log-book she recorded:

"At the beginning of this term I thought this was going to be just another boring project but as the time went on it got more and more interesting... I've never used key-words or the Subject Index before, but they helped me get loads of information."

5.6.9 In her Self-Assessment responses, recorded after she had completed her English project, Mandy said that she had deliberately structured her notes before writing them up, something she said she had not done in previous writing. I asked her about this structuring during an interview and she explained:

"... there was so much information and it took me a long time to sort through it. There were lots of bits of information dotted around everywhere.... I collected things together for each of the chapters and left information out that didn't fit into any of the chapters."

Mandy made great efforts to write up all of the information in her own

words and chose a style that consciously engaged the reader. Even when she looked at global issues such as rainforest conservation she engaged the reader by offering ways the reader could help the situation. She had experienced this style in a pamphlet and adopted it for the whole of her project.

(c) Evidence of Metacognition While Working Through the Study Pack.

5.6.10 There is evidence that Peter engaged in metacognition. He used keywords and the Subject Index to organise his literature search, and in his Self-Assessment responses and responses in interview he showed that he was aware of the value of the strategy. It was evident from his log-book that he had deliberately structured his project, and his responses in an interview showed how conscious this structuring was. His awareness that the structure he had chosen would be helpful to the reader illustrated that he had monitored the available library research skills. However, there is also evidence of the limitations of Peter's metacognition. In Self-Assessment responses, and later in an interview, he said that he had written his project in his own words when clearly he had not. Even when faced with the evidence of his project he could not accept that most of it had been copied from books. It was unclear why Peter was able to consciously monitor his information retrieval skills and the structuring of his project, but was not able to monitor the style of his writing.

5.6.11 There is evidence that Mandy engaged in metacognition through all of the stages of the research process. In her log-book she listed eleven keywords and the appropriate classification numbers, and it was clear from her

essay that she used these key words to find the necessary information. A log-book entry, corroborated in an interview, expressed how pleased she was with this strategy, a strategy which she had not been aware of before. In her project there was evidence that Mandy had given some thought to structuring her argument. Her comments in interview showed that the decisions she made about structure were made consciously, and her decision to leave out researched material, because it was not entirely appropriate to the structure she adopted, is clear evidence that she was monitoring her library research skills. A comparison of her notes and her completed project showed that she wrote her project in her own words. In interview she explained how she had consciously chosen to write in a style which engaged the reader.

(d) Library Research Skills Evident in the Transfer Task.

5.6.12 The RE essay that Peter produced for the transfer task was a poor piece of work and provided no evidence that he had transferred any library research skills that he had. He did not research any additional information because he felt that he "didn't need it." This response which was provided during an interview was not offered in a dismissive manner but rather reflected the fact that he could see no reason why the task required additional information beyond that provided by the teacher.

5.6.13 There was no evidence that Peter transferred any information processing skills. He used only two pieces of information provided by the teacher. His essay amounted to one paragraph offering his opinions on abortion, two hundred words on the Hypocratic Oath and two hundred words on

the life of Hippocrates. The information that he used was entirely copied from some inappropriate source material provided by the teacher for a previous assignment. He was surprised when I told him that he had used the wrong support material, but unperturbed.

5.6.14 In Self-Assessment responses Peter claimed to have used all of the library research skills in the transfer task although in fact he had used none. In an interview he could not account for this.

5.6.15 Mandy did not display any library research skills in the transfer task. She did not research any additional information beyond that provided by the teacher. In an interview she commented:

"I didn't use many of the skills I learnt in English because I wrote alot of my notes from the videos we watched in class. If we didn't gain alot of information from the videos I would have used the method we used in English."

When asked what method she was referring to Mandy confidently recalled the use of key-words and the Subject Index.

5.6.16 For her RE essay Mandy used seven of the pieces of information provided by the teacher. She copied this information directly from the sheets, linking it tenuously together with segments of her own words. In Self-Assessment responses completed after Mandy had written her RE essay she recorded that she had made no attempt to structure the material but had selected at random. When asked about this she said that she had found the subject of the essay "boring".

(e) Conditions Which May Have Promoted or Inhibited Transfer.

5.6.17 (i) When Peter worked through the Study Pack there was evidence that he engaged in metacognition. However, his Self-Assessment responses after he had completed the transfer task showed no evidence of metacognition at all. His claim that he had used all of the library research skills when in fact he had used none shows that he did not monitor the use of available library research skills at all. That he could not explain in interview why he had made this claim confirmed that he had not engaged in metacognition. It seems that the transfer of available skills was inhibited in part because Peter did not engage in metacognition.

5.6.18 (ii) Mandy's RE essay and her Self-Assessment responses provided no evidence that in the transfer task she had engaged in metacognition. However, interview data produced a clearer picture of the way she had worked. She reported that she had consciously considered the library research skills she had learnt while working through the Study Pack but had consciously chosen not to use them in the transfer task. This suggests that although engaging in metacognition during a task increases the likelihood of the transfer of appropriate skills, it does not automatically lead to transfer.

5.6.19 (iii) Both of these pupils observed that they did not find the subject of the transfer task interesting. This lack of engagement in the task may have inhibited transfer of available skills.

5.6.20 (iv) Both of these pupils felt that the information provided by the teacher was sufficient for the demands of the task. Their perceptions of the teacher's expectations may have inhibited the transfer of available skills.

Category Six: Pupils who did not show evidence of having research skills, did not show evidence of developing them while working through the Study Pack but used them in the transfer task.

5.7.1 It would be reasonable to assume that some pupils would have research skills but would not use them at all opportunities. This could have resulted in pupils from this sample failing to demonstrate research skills in two of the three situations considered here but displaying them in the transfer task. There were no pupils from this sample who fell into this category.

Conclusion.

5.8.1. In this chapter the experiences of eight pupils have been considered in order to identify conditions which may promote or inhibit the transfer of learned library research skills. These conditions which have been identified are discussed further in the next chapter to consider the consequences each of them has in the classroom.

Chapter Six.

A Consideration of the Findings.

Chapter Six: A Consideration of the Findings.

Introduction.

6.1 This study has considered conditions which promote or inhibit transfer of learned library research skills. In the first instance, it seems that for the pupils to learn library research skills through supported self-study it was necessary that they engaged in metacognition. However, while it was clear that the pupils had to learn the skill before it could be transferred, pupils who engaged in metacognition and learned library research skills did not necessarily transfer that learning. A number of conditions have been identified which may promote or inhibit the transfer of learned library research skills. The following consideration of these findings will focus on:

- (a) the pupils who engaged in metacognition while studying library research skills;
- (b) the pupils who acquired the library research skills but who did not transfer the skills to a transfer task;
- (c) the pupils who acquired the library research skills and who did transfer them to the transfer task.

A. Those pupils who engaged in metacognition while learning library research skills: Peter, Sue, Joanne, Emma, Rachel and Tim.

6.2.1 It was shown in figure 5.1 that six of the pupils considered in detail in Chapter Five engaged in metacognition while working through the

Study Pack. It is clear that all of these pupils improved their library research skills, three of them marginally at the planning stage, three of them far more substantially. The three pupils who made marginal improvements in their research skills did not transfer them to the transfer task. Of the pupils who made significant improvements in their research skills, two of them transferred their skills to the transfer task, and the other pupil deliberately chose not to transfer.

6.2.2 These findings raise the following issues:

(i) It seems that engaging in metacognition while acquiring library research skills promotes transfer, but it does not guarantee transfer.

(ii) Those who transferred were also those who made the most significant improvement in their research skills. This may suggest that when learning a skill that has already been partially learned, it is difficult to overcome the handicap of not having learnt the skill effectively in the first instance. It seems that it may be easier to introduce a new higher order skill than to modify skills pupils already partially have.

B. Those pupils who learnt, or improved existing research skills but who did not transfer those skills: Peter, Sue, Mandy and Joanne.

6.3.1 Each of these four pupils engaged in metacognition while learning the library research skills, and had consequently recognised the value of the research skills they had learnt. However, in the transfer task none of them engaged in metacognition. Peter and Sue failed to transfer any of the

library research skills they had available to them. Joanne transferred the information processing skills but this was not done consciously. Interviews conducted some time after the transfer task showed that the pupils had retained the library research skills they had learned, but that they had not recalled them during the transfer task.

6.3.2 Interview data, responses in log-books and responses to self-assessment sheets, indicated that none of these pupils had understood the RE teacher's expectations that they engage in library research during the transfer task. Sue and Joanne felt that the material provided by the teacher was sufficient for the demands of the task. This raises questions about the status pupils give to materials provided by teachers and suggests that pupils are sometimes too willing to assume that teachers provide all the necessary resource material. It appears that a significant reason Peter did not transfer was that he was not at all interested in the subject of the transfer task.

6.3.3 From this sample the following reasons for a failure to transfer emerge:

- (i) a failure to engage in metacognition in the transfer task;
- (ii) a failure to understand the demands of the task;
- (iii) a lack of interest in the transfer task.

C. Pupils who transferred their research skills to the transfer task: Tim, Emma and Rachel.

6.4.1 These three pupils definitely transferred the acquired library research skills.

(i) Tim already had sophisticated library research skills but improved them;

(ii) Emma and Rachel initially had very poor library research skills but developed sophisticated skills.

6.4.2 These findings suggest for this sample, that in the sequence of considering pupils' skills, improving them, and then looking for transfer, the initial level of the pupils' skills was not significant. A pupil with library research skills could transfer them in another circumstance, while pupils with very poor library research skills could acquire them and then transfer them successfully.

6.4.3 All three of these pupils engaged in metacognition while working through the Study Pack. Tim did not enjoy studying the Pack because he already had sophisticated library research skills, and during the period that he studied the Pack there was no evidence that he improved those skills. However, in the transfer task he also engaged in metacognition, and here there was evidence that in fact he had improved his skills. This improvement can be directly attributed to his studying of the Pack. Emma and Rachel both enjoyed working through the Study Pack, and both developed good library research skills as a consequence of their study. In the transfer task they clearly engaged in metacognition and transferred their

newly acquired skills.

Further Observations About Conditions Which May Enhance and Inhibit the Transfer of Library Research Skills.

6.5.1 It seems possible to say that the fourteen year old pupils from this sample did not learn library research skills without engaging in metacognition. It is also possible to say that in this sample the acquisition of library research skills did not guarantee the transfer of these skills. It is also clear that transfer did not occur if pupils did not engage in metacognition in the transfer task. However, this study does not rule out the possibility that there are ways of learning skills and transferring them without engaging in metacognition. It has already been seen in para.6.6, for example, that Joanne was able to transfer information processing skills without doing it consciously.

6.5.2 Although some of the pupils in this sample had misunderstood the RE teacher's expectations, all of the pupils who transferred their library research skills had understood the demands of the transfer task. It may be that for those pupils the RE teacher's instructions acted as a cue, which helped them to transfer their library research skills. It may be that the pupils responded to the nature of the task rather than the way the teacher gave the instructions. Whatever the case pupils were more likely to transfer if they were totally clear about the demands of the task. It seems that taking steps to secure the pupils' interest pays dividends in achieving transfer.

6.5.3 While engaging in metacognition seemed to enhance the transfer of skills, it is necessary to consider whether the act of engaging in metacognition during the transfer task necessarily led to transfer. Mandy's case provides some interesting data on which to reflect. Like Emma and Rachel, Mandy had very poor library research skills prior to working through the Study Pack, engaged in metacognition at all stages of the learning process and developed good library research skills. Like Emma and Rachel, she also engaged in metacognition during the transfer task, but unlike Emma and Rachel she did not transfer her library research skills. Once Mandy had been given the transfer task she consciously reflected on the library research skills she had, but then chose not to use them. She was aware of the demands of the transfer task, but came to the conclusion that the teacher had provided sufficient information for her to tackle the task. This decision is likely to have been influenced by the fact that she was not interested in the transfer task.

Conclusion.

6.5.4 From the evidence provided by this sample, it seems possible to say the following about conditions which enhanced or inhibited transfer:

- (i) pupils had to understand the demands of the transfer task if transfer was to occur;
- (ii) understanding the demands of the transfer task did not automatically lead to transfer;
- (iii) pupils who transferred engaged in metacognition during the transfer task;

- (iv) engaging in metacognition did not automatically lead to transfer;
- (v) pupils were unlikely to transfer if they were not interested in the nature of the transfer task.

The Significance of Each of These Conditions for the Classroom.

6.6.1 It is now possible to consider each of these conditions which may influence transfer, and identify the consequences they have in the classroom.

1. Understanding the Demands of the Task.

6.6.2 (a) The observation that pupils are more likely to transfer skills if they understand the demands of the task appears to be too obvious to merit attention. However, this study suggests that not all pupils understood some of the subtleties of adult language. For example, the RE teacher's comment "You may use the library to find additional information" actually meant "I expect you to use the library to find additional information" but was not interpreted as that by all of the pupils (see paragraph 5.2.27). It is likely that there are other adult uses of language which are misinterpreted by pupils. It may be a valuable exercise for teachers to consider the extent to which they take for granted assumptions in their instructions which are not shared by pupils. If more consideration were given to this then pupils would be more likely to transfer available skills.

6.6.3 (b) It is also clear that teachers use specialist vocabulary which means different things in different areas of the curriculum. It was

observed in this school, for example, that different teachers have different note-taking expectations. English teachers wanted pupils to read research material, extract the necessary information and present it in the pupils' own writing. Science teachers however, wanted pupils to copy passages from reference books, believing that pupils could lose valuable information by summarising the text in their own words. This example illustrates one of the difficulties which pupils may face in many areas of the curriculum. While the NCC has recognised that some themes and issues are "Cross Curricular" in nature, a more basic demand appears to be for (a) schools to identify which skills they are referring to under the umbrella term 'transferable skills' and (b) curriculum areas in schools to define what they mean by each of these transferable skills. If, in fact, different curriculum areas are referring to different skills by the same broad terms then transfer is unlikely to occur. Shared definitions of these transferable skills are required if pupils are to transfer available skills.

2. Engaging in Metacognition When Acquiring Skills and in the Transfer Situation.

6.6.4 My experience and the findings of this study would lead me to offer the following suggestions to teachers who want to encourage their pupils to transfer the skills they have learnt in one context and to apply them in another.

6.6.5 (a) Introduce new skills in a context which is seen by the pupils to be valuable, in which the skills are used to solve a real problem. In this

way pupils are more likely to see the potential of the skill. For example, Emma (para. 5.5.14) and Rachel (para. 5.5.4), enjoyed working through the Study Pack because they had been interested in the subjects they had chosen to research. They successfully learnt library research skills, in part because the skills allowed them to research into their chosen subjects. This positive experience helped them to appreciate the potential of library research skills and was one reason they used the skills in the transfer task.

6.6.6 (b) Encourage pupils to solve problems in groups when acquiring a new skill. It was observed in paragraph 4.2.4 that the tutorial groups helped the less able to cope with the reading demands of the study pack; helped everyone to clarify their areas for research; and enabled the pupils to help each other with the process of library research.

6.6.7 (c) Encourage pupils to record personal responses while acquiring new skills, possibly in a log-book. This may enable pupils to reflect on the process and the practical value of the skill. In this study the pupils were able to record their responses to the experience of learning library research skills in both their log-books and their study packs (para. 4.2.3). Formally recording their responses helped the pupils to reflect on their experiences in a way which they may not otherwise have done.

6.6.8 (d) Build tutorial sessions into the pupils' experiences. It was observed in paragraph 4.2.4 that in the tutorials pupils raised questions about the research process; it was possible to make them aware of problems they did not realise they had; and the discussion allowed the pupils an

opportunity to reflect on their learning.

6.6.9 (e) Stress the transferable nature of skills. In this study Joanne and Sue (para 5.3.13) learned library research skills while using the Study Pack, but failed to use them in the transfer task. In interview they expressed astonishment that the skills learned during the English lessons could have been relevant to a task in RE. Pupils' and teachers' thinking may become constrained by curriculum area boundaries. If schools can define which skills are transferable skills they may then be able to map each skill's application across the curriculum. This would help to highlight to pupils that skills are transferable. This is not to suggest that it is necessary to map all potential applications of all skills, as schools must hope that ultimately pupils themselves will decide when it is appropriate to use the skills they have. The mapping across the curriculum of some transferable skills could be used to highlight to pupils and teachers the transferability of many more skills.

6.6.10 (f) Increase pupils' capacity to become independent learners. In this study some pupils gave too much status to the material provided by the teacher, and consequently felt that they did not require any more information to complete the transfer task (see, for example, paragraph 5.3.13). It would seem that a more open-ended transfer task, with fewer teacher-provided resources would have increased the chances of pupils transferring their library research skills. It seems necessary, in general, to create an atmosphere of enquiry in schools, so that pupils become more accustomed to choosing their own resources to solve open-ended questions.

3. Pupils Being Engaged in Their Learning.

6.6.11 There is evidence in this study that pupils were more likely to transfer their library research skills if they were interested in the transfer task (see, for example, Rachel, paragraph 5.5.17). There is also evidence that pupils were unlikely to transfer skills if they were not interested in the task set (see for example, Peter, para. 5.6.19). It appears that if teachers are to promote transfer they need to give more thought to engaging the pupils' interest. The National Curriculum has reduced the amount of choice teachers have to design the curriculum as it prescribes curriculum content. However, it seems essential that pupils are given as many opportunities as possible within this restriction to direct their own learning. If pupils are more likely to transfer skills when they are interested in the work they are doing, then teachers must find ways to increase the opportunities for pupils to make decisions about what they learn.

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Appendices

Appendix A.

The First Study Pack.

RESEARCH SKILLS IN THE LIBRARY



This tells you that a new section is about to begin.



This tells you that you will have a question to answer.



This tells you that there is a summary of the information that you have been reading about.



This tells you that you should not go on to the next section until you have completed the task that has been set.



This tells you that you have come to the end of a section.



INTRODUCTION

The booklet is here to help you produce a booklet on a subject that you choose. You will need to work on your own for much of the time. You will also do some work in small groups. The teacher will always be there to help you when you need help.

You will need to work through the exercises in this booklet. The exercises will help you to produce a thoughtful and detailed booklet. DO NOT take short cuts with the exercises as they are there to help you.

WAYS AND MEANS IF YOU DO NOT UNDERSTAND SOMETHING

This booklet will help you solve the following problems:

What subject should I choose?

What sources are there to help me find information?

Which sources will be useful to me?

How do I make a record of the information I want to keep?

How do I organize the information I have recorded?

Which is the best way to write up and present my project?

The way you solve each of these problems is very important, so when your project is marked you will get marks for the way you have solved each problem.

Now, work through the booklet. Ask for help whenever you think it is necessary. Most of the exercises in as much detail as you can. I hope you enjoy the work. I hope you produce an interesting booklet.



CHOOSING A SUBJECT FOR YOUR PROJECT

Over the next month you will be producing a book of your own which can be kept on the bookshelves in the classroom. Other people who are interested in the subject will be able to read your book. You will need to choose a subject for your book that you will enjoy reading about and writing about.

This booklet will help you to find information on the subject you choose, to organize that information and to present it in an interesting way.

Are you interested in anything? It may be cookery, photography, sport, pop, music, fishing, or anything else. If you are interested in a subject like these you may choose to produce a book about it. There may be other things that you may wish to read and write about: the increase in violence in Britain; prisons and punishment; bringing up children; the use of animals in experiments.

Choose some subjects, or things that interest you, that you would possibly like to read and write about. Put them in the box below.



Some things I might like to read and write about: *Shooting, Auto-crossing, Fishing, and Golf.*

I am sure you will know what I mean when I say that some projects that are written in school look as though the pupil has:

found ONE book in the library;
copied out pages from this book;
copied a few pictures;
produced an interesting cover.

I am sure you will agree with me that this is a waste of time. Anyone who wanted to know about the subject of the project could have read books from the library that the project was copied from. Your topic needs to be interesting and different, something that provides information in a way that no other book does.

Once you have chosen an area or subject that you are interested in, you need to choose an aspect of that area or subject to collect information about. A very good idea to make your topic interesting is to think of a question that your topic can then answer. Here are two examples.

If you had chosen "Coolery" as a subject for your book, you may have thought of the question "How can I produce a healthy menu of meals for a family of four?" or "How cheaply can two live if they are still eating healthily?" I think that you will agree that the answers to these questions would be more interesting than say a topic on "Some things about coolery."

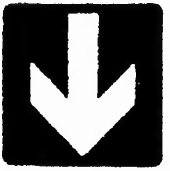
If you had chosen "The increase in violence in Britain" as an area for your book you may have thought of the question "Why has there been an increase in violence?" or "How should we punish people who commit various violent crimes?"

It may seem that these questions could be answered very easily, with a short paragraph. This booklet will show you how these types of questions can be answered very thoroughly.

Take one of the subjects or areas that you put in Box One. Think carefully about two possible questions that you could use to read about and answer for your book. Put your two questions in Box Two.



Box Two. *Where is the best place to live? Army*
Where is the best place to live? Army



WHAT DO I LOOK UP IN THE LIBRARY?

The library has many books which can be used to answer your questions. However, it is sometimes difficult to find the information because it could come under many headings. Your next task is to think of as many key-words as possible that are connected to your topic. These words can then be used to help you look up all the information you need.

Look at this example. I am going to go through some of the exercises that you have to do as though I was producing a book on "Violence in Society" and I have chosen to answer the question "How should we punish people who commit various crimes?"

To think of the key-words that will be helpful I have thought for five minutes, and written down every aspect of this question that I could think of. My key-words are listed below.

punishment, law and order, prisons, violence, crimes, the Police, football, old-aged pensioners, riots, murder, rape guns, knives, terrorists.

You may have noticed that some key-words are not as obvious as others. Now you choose one of the questions you put in Box Two. Write it in Box Three. In Box Four write all the ideas that come into your head which could be used as key-words.

Box: Three. *Can I get a job?*

Box: Four. *Children, Parents, women, lawyers, shops, clubs,*





WHERE ARE YOU GOING TO GET YOUR INFORMATION?

If you are going to produce an interesting book, which other people will enjoy reading, you need to look at all sorts of information. Then you need to choose which pieces of information will be suitable for you. This section of the booklet will help you choose which places you can look for information.

You will have used the school library before to get information so you probably know that there are many books you can look at.

1. There are likely to be many books which have been written on the subject of your book, or books which have large sections on the subject you have chosen. These books will appear in the lending section of the library and so can be taken out of the library.
2. Look at these examples of Reference Books which may have information for you.

Reference Books are books which cannot be taken out of the library. It is likely that these books will only have small sections on the subject you have chosen.

3. Did you know that the School Librarian keeps articles cut from newspapers which she collects under various headings? She may have collected some articles on the subject you have chosen.
4. You might find that there is a magazine produced each month which deals with the subject you have chosen.
5. There are many local Societies and Associations which may be able to provide you with information.

6 The local library will have many books which the school library does not have.

7 You probably watch some television every night of the week. You might be able to find some information for your book on the television.

8 Don't forget that people are a very useful source of information.
 (a) You may be able to find someone's experiences or views which will be helpful.
 (b) You may be able to find someone who has some information which is not kept in the library.

Plan ahead

Later you will have to think more carefully about each of the eight points you have just read about. At this stage answer the question: Which of the sources mentioned in points 1-8 do you think will be useful to you?

Put a tick or cross here.

1 Lending books	-	-	-	-	-	-	-	-	-	<input checked="" type="checkbox"/>
2 Reference books	-	-	-	-	-	-	-	-	-	<input type="checkbox"/>
3 Newspaper articles	-	-	-	-	-	-	-	-	-	<input type="checkbox"/>
4 Magazines	-	-	-	-	-	-	-	-	-	<input checked="" type="checkbox"/>
5 Local Societies and Associations	-	-	-	-	-	-	-	-	-	<input checked="" type="checkbox"/>
6 The local Library	-	-	-	-	-	-	-	-	-	<input checked="" type="checkbox"/>
7 Television	-	-	-	-	-	-	-	-	-	<input type="checkbox"/>
8 People	-	-	-	-	-	-	-	-	-	<input type="checkbox"/>





FINDING RESOURCES

This section will help you find books in the library on the subject you have chosen for your book.

If you have a collection of anything which you refer to regularly, it is likely that you will organize it in some way so that you can find things easily. For example, if you have lots of pop music at home you may collect all the singles together, all the albums together, and all the CDs together. Then, within each type you may arrange them in alphabetical order. However, there are many different ways you could organize your music collection. One of them could be to put everything in the order you bought it or were given it, putting the oldest recording first and the newest recording last.



1 Most set lists in school are arranged with the boys' names first in alphabetical order, followed by the girls' names in alphabetical order. What other ways could the set lists be arranged? Put two ideas in Box 5.

Box 5 They could be arranged as the Boys and girls in alphabetical order or oldest to youngest.



2 The subjects you study at school are often grouped together in the minds of teachers. History, Geography and RE seem to be similar in some ways, while Art, Craft and Domestic Science seem similar in some ways. Can you think of any other way to group the subjects at school together? Put an idea in Box 6.

Box 6 You could have a box for the Boys and girls in alphabetical order or oldest to youngest.

Using the Library Code Chart to find books you need would be an easy system to use if all the information you wanted could easily be put into one subject. However, this is not the case. Where would you put the following books?

1. The History of the Bicycle History? Science? Industries?
2. Football for the Over Eighties. Hobbies? Sport? Miracles?

The book "Crack the Code" will help you find all the books in the library which will have some information about your topic.

Crack the Code has a list, in alphabetical order, of all the subjects in the library. Next to each subject is a number which helps you find which shelf the books are kept on that subject. Really, Crack the Code is a very detailed Library Code Chart.

The books in any library are arranged in some way which should help you find the books you want. However, there are many different ways the books could be arranged.

You will realize that books are divided into "Fiction" and "Non-Fiction." The non-fiction books are the information books. These are the books that are of interest to you at the moment.

In the School Library the information books are grouped according to subjects. Each subject is given a number which is put on the spine of the book. The books are arranged by this number on the shelves.

To answer the next question you will need to look at the "Library Code Chart" and the map of the library. You will find them both at the end of this booklet.

QUESTION: Look at the list of subjects below. Find the numbers they have been given on the Library Code Chart. Try to find roughly where the subjects would be found in the library by using the map of the library.



SUBJECT	NUMBER
Mathematics	510
Domestic Science	503
Hobbies	446
Geography	410



For example, if I wanted a book on Prisons I would be given the number 365.3. This means that if the library has any books about prisons the books will be kept on the shelf which has books with the number 365.3. You can use your map of the library to see roughly which shelf the books will be kept on.

Which numbers are you given in Crack the Code for the following subjects?

SUBJECT

NUMBER

SUBJECT

NUMBER

Alligators
Football
Coffee
Prisons

41.6.65
7016-3-04
164-352
20.3-3

Sahara Desert
Tunnels
Worms
Zulus

416-6
624-103
205-1
468-401

It should be easy now to find books on the subject you have chosen. BUT have you found ALL the books which have information about your subject? For example, if I wanted to write a book about Russia I might want to find out about the history of Russia, industry in Russia, religion in Russia and sport in Russia. This means that in the Crack the Code book I would not just look up where the books about Russia were kept, but I would also look up where books on history, industry, religion, and sport were kept as well.

Look back at the key-words you wrote in Box 4. In the space below write your key-words. Next to each word write the number it has been given in Crack the Code. Look at your map of the library and see roughly where all the books you want will be kept.

on page 104

You may find that some of your key-words do not appear in Crack the Code. Never Mind. The words will help you later to find information inside the books you choose to read.

KEY WORDS	CRACK THE CODE NUMBER
clothes boots rubber boots shoes clothes	

10A



Here is a summary of all the places you could find information for your book.

1. You have a list of key-words and know where in the library the books are kept on each key-word.
2. Use your map of the library to find where the reference books are kept. Using your key-words it should be easy to find information.
3. Look at the list of headings under which the Librarian has collected newspaper articles. Do you think you would find any information about any of your key-words from the articles?
4. Look at your map of the library. Find where the magazines are kept. Are there any magazines which have information on your subject?
5. Find the Yellow Pages section of the telephone directory. Look under Societies and Associations. Are there any local societies or associations that may have some information about your subject?
6. All the work you do in the School Library can be repeated in the local library to see what extra information can be found.
7. Check your television watching over the next few weeks. Do any of the programmes have information about your subject?
8. Look at your key-words. Are there any adults who may have information about any of your key-words?

CHECK

You should now feel reasonably confident about finding information in all sorts of places:

the lending section of the library,
the reference section of the library,
the collection of newspaper articles kept by the librarian,
magazines,
local associations or societies,
television,
people.

DO NOT begin collecting your information until you have read the sections of this booklet on " Selections " and " Making Records of What You Read. "

The next section of this booklet will help you to decide whether the information you find is really what you want.



SELECTIONS

You now know that there are all sorts of books, magazines and newspaper articles which may have information that you want. However you are not likely to use all of these.

- (a) The source may be too simple for you.
- (b) The source may be too difficult for you to understand.
- (c) The source might be so old that the information may be out of date.
- (d) There may be many other personal reasons why you do not want to use a particular source.

It will be very easy for you to glance through the sources you find to see if the way they have been written is suitable for you. But, how do you look at a book and very quickly discover if it has information you want? There are some simple steps.

1. Look through the "Contents" page at the front of the book to see what each chapter is about. You can then glance through the chapters which seem to have information you want.

2. If the book has an index at the back of the book check to see whether any of your key-words are in it. Then look up the page references to see how much information there is on each key-word.

3. You do not need to read whole books, or whole chapters. Try these exercises which introduce you to the ideas of "skimming" and "scanning".

THE WORLD UNDER WATER

Since one tenth of the world is covered by ice, the effect on mankind if all the ice melted would be dramatic. Most of this ice stretches across the 1,800,000 sq km (700,000 sq miles) of Greenland and the 13,000,000 sq km (5,000,000 sq miles) of Antarctica. If all this ice were to melt, the level of the seas would rise by about 76 metres (250 feet), swamping all the world's harbours and many of its principal cities. The Panama Canal would become a strait and the Suez Canal would vanish. The Bering Strait between Alaska and the USSR would widen, allowing more warm water to sweep into the Arctic and channeling cold water down the west coast of America. Most of England would vanish apart from the Cotswolds, Mendips, Chilterns and Downs. Only the tips of the New York skyscrapers would peep above the waves but Australia and Africa would be relatively unharmed. Rainfall would be redistributed and continental areas could experience drought. Such a melting could shift the poles and start another Ice Age due to more water vapour and hence more snow.

But apart from the submerging of vast areas of land, the effect would be a return to the conditions experienced just before the great Ice Ages. Air temperatures in both high and low latitudes would be very similar. The temperature of the Arctic would rise by 5-10°C in summer and by 2.5-5°C in winter. The Antarctic summer would be warmer than the Arctic but its winters would be more severe. There could even be a return to sub-tropical vegetation in the lower latitudes and there would be mass migrations of birds and animals towards the north. The warming of the sea would have a pronounced effect on the pattern of sea life. For example, during the warmer phase of the early part of this century the cod, herring and haddock suddenly appeared off the Greenland coast. As the climate became cooler in the 1960s, the catch dropped dramatically. In some land areas there would be a big increase in the agricultural growing season.

Skimming

When you skim a passage you get an idea of what it is about. You do not read every word, but instead you read:

- a the title and any sub-headings
- b the first sentence of each paragraph
- c the last sentence of the passage

You should also look at any diagrams, charts or graphs.

Skim the passage on the left then underline the answers to these questions.

- 1 This passage is about
 - a the world
 - b melting of the ice-caps
 - c the Panama Canal
 - d how higher temperatures will help farmers
- 2 How much of the world is covered by ice?
 - a one quarter
 - b one third
 - c one tenth
 - d one fifth

Scanning

When you scan a page or a book, you are looking for a piece of information. You do not read every word, but instead let your eye run quickly down the centre of the page. Now scan the same passage so that you can fill in the missing words in these sentences.

- 1 If the world's ice melted, the levels of the sea would rise by

76 metres

- 2 The Antarctic summer would be warm than the Arctic but its winters would be more cold.

- 3 During the warmer phases in the early part of this century, some types of fish suddenly appeared off the Greenland coast.

These three simple steps will save you reading books that don't have very much information on your topic. They will also save you reading a whole book to find the information you want. Always glance through books first to check how useful they might be.

DO NOT begin looking for your information until you have read the section in this booklet "Making Records of What You Read."



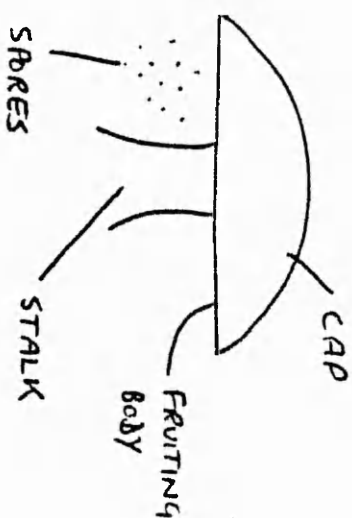
MAKING RECORDS OF WHAT YOU READ.

How do you make notes from what you have read?

1. Do you copy out everything that you read?
2. Do you try to write what you have read in your own words?
3. Do you make diagrams or tables from information you read?
4. Do your notes look untidy?

There is no correct way to make notes. Look at these examples.

The mushroom is the fruiting body of a fungus which produces millions of spores. Spores come from under the cap which is supported on a stalk.



Mushroom = $\frac{\text{CAP}}{\text{STALK}}$ + 1,000,000s of spores

1. mushroom / fruiting body of fungus.
2. millions of spores.
- 3 Sp. come from under cap.
- 4 Cap → stalk.

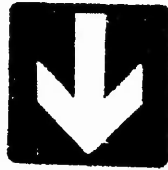
A. You need to be clear about what information you want to record. Remember the question you have set yourself which will be answered with your book. Make sure that the information you record will help you answer your question. If you are recording information which does not help you answer the question you may be wasting your time.

B. You will be given an exercise book to keep your notes in. Only make notes on one side of each page. When you have all the information you think you want you will need to organize it before you begin writing your novel. A helpful way to organize all your notes is to cut up all the pages in your exercise book. Then you can put all the notes on each area of your topic together in different piles. These piles will help you organize the notes in order before you begin writing your topic.

C. If you interview people you will either have to make notes about what they say as they say it, or use a tape-recorder. If you use a tape-recorder you use the tape as if it were a book from the library.

Which system do you think would be the best, note-taking or tape-recording? Can you think of any problems with each system? Write one problem with each system in the box below.

note-taking could be interrupted by people.
taping could miss some things out of context.



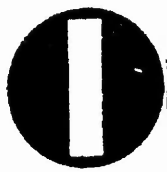
COLLECTING YOUR INFORMATION

Now, do all the reading you want to do.

Make notes of all the information you want to keep.

When you have done all the reading you want to do organize all the notes in order.

DO NOT go on to the next section of this booklet until you have collected all the information you want.





WRITING YOUR BOOK.

You should be in a position now to write your book. Remember that all the stages you have gone through already have been very important.

- (a) You decided what subject you wanted to write about.
- (b) You collected your key-words.
- (c) You decided where to find your information.
- (d) You chose the sources which you thought would be helpful.
- (e) You made notes from your reading of the sources.
- (f) You organized your notes in a logical order.

Before you begin to write you need to decide who is going to read your book. Are you writing your book for a teacher to read? Are you writing your book for someone of your own age to read? You will probably find that the person you are writing for will influence the way you write.



Who do you want to read your book? Answer: _____

You have your notes organized in a logical order now.

You must decide whether you will use sub-headings.

Will you use sub-headings?

YES	NO

Tick.

You must decide whether you want chapters.

Do you want chapters?

YES	NO

Tick.

You must decide whether you will use diagrams and tables.

Will you use diagrams and tables?

YES	NO

Tick.

You must decide whether you will use pictures.

Will you use pictures?

YES	NO

Tick.



INTRODUCTION AND CONCLUSION

When someone picks up your book they will want to know straight away what it is about. The title will give them some idea. However, you will need to write an introduction which says quite clearly what aspects of the subject you deal with. You may write your introduction before you write your topic; this would help you organize your ideas in a logical order. However many people write introductions once they have finished writing everything else.

So, decide when you will write your introduction.

In your introduction say clearly what aspects of your subject you deal with. You must list the aspects you deal with in the same order they appear in your book.

Here is an example from my book "How Should We Punish People who Commit Various Crimes? "

" Many people think that there has been an increase in violent crimes in recent years. Many people think that to control the problem prison sentences should be longer, and that hanging should be brought back. This book looks at the facts and figures to see whether violent crimes are on the increase. It also looks at the various ways we can punish people for committing various crimes. It makes suggestions about the best ways to control the problem. "

At the end of your book you will need to help the reader by summarizing what the reader has read. You need to remind the reader what aspects of the subject you have dealt with. This conclusion will probably be very similar to your introduction.

Here is an example from my book.

" Figures show that there has been an increase in violent crimes in recent years. Different people have suggested different reasons for this. I do not think, however, that longer prison sentences, or hanging, would improve the situation. More policemen, better housing conditions, more jobs and more concern from parents about their children would all help to reduce the problem. "

" Figures show that there has been an increase in violent crimes in recent years. Different people have suggested different reasons for this. I do not think, however, that longer prison sentences, or hanging, would improve the situation. More policemen, better housing conditions, more jobs and more concern from parents about their children would all help to reduce the problem."

Now, write your book, using sub-headings, chapters, diagrams and tables, and pictures if you have decided to. If you enjoy writing it, it is likely that other people will enjoy reading it.

DO NOT go on to the next section of this booklet until you have completely finished your book.



A REVIEW OF YOUR WORK .

Do not attempt this section until you feel you have been completely written.

You have used many skills while you have been planning and writing your topic. Some of the most important ones are summarized in the diagram below. Read through the list very carefully and for each skill put a tick in a column to show how confident you now feel about using that skill.

Choosing a topic for your book.				
Making a list of key words.		✓		
Using "Crack The Code".		✓		
Using other sources: Reference books			✓	
Newspaper articles		✓		
Magazines		✓	X	
Local Societies			✓	
Local libraries		✓		
Television			✓	
Other people			✓	
Keeping records of what you have read.		✓		
Selecting suitable sources		✓		
Skimming and scanning.		✓		
Organization of your notes.			✓	
Writing an introduction.		✓		
Writing a conclusion.			✓	
Writing your book.		✓		
Presentation of your book.		✓		
Any other comments.				

Look at the skills for which you have ticked "Fairly" or "Not Really." Can you think of any things you can do to improve your ability in these things? Put your thoughts in the box below.

--

I hope that you have found this booklet helpful. I hope that you have been persuaded that the stages you have been through have helped you produce a much better piece of writing. I hope that next time you have to write a topic on any subject, in school or out of school, you will go through these stages and produce a better piece of writing.

Appendix B.

The Second Study Pack.

The Research Process.....Structure.

STEP 1 *What am I going to write about?*

- (a) Thinking of a subject.
- (b) producing a research question.
- (c) Choosing the audience for the write-up.

STEP 2 *How do I get the information?*

- (d) Identifying a wide range of sources.
- (e) Choosing the appropriate sources.

STEP 3 *How do I use the library?*

- (f) Generating key-words.
- (g) Using the subject index.
- (h) Using all the reference books.
- (i) Using other reference sources.

STEP 4 *What resources shall I use?*

- (j) Using the book's index.
- (k) Using the book's contents page.
- (l) Reading some of the text.
- (m) Considering the date of publication.

STEP 5 *What shall I make a record of?*

- (n) Skimming through a source.
- (o) Making notes.

STEP 6 *Have I got all the information I need?*

- (p) Organising notes into sub-sections.
- (q) Organising sub-sections into a logical order.

STEP 7 *How should I present it?*

- (r) Who is the audience?
- (s) Using pictures, sub-headings and chapters.
- (t) An introduction and a conclusion.

STEP 8 *What have I achieved?*

- (u) Identifying strengths and weaknesses.
- (v) Action to overcome weaknesses.

RATIONALE.

As English teachers we are confident that library research skills are extremely important for all secondary pupils. Pupils are frequently asked to use the library to find information on a variety of topics and so introductory library research skills sessions focus almost exclusively on information retrieval (eg the Dewey Decimal System and the subject index). However, as English teachers we are also aware of some of the work that is passed off by pupils as "research", which is in fact just regurgitation of information from one or possibly two books from the library. The materials in this booklet are designed to move students away from copying information and towards intelligent selection and synthesis of information. It is not an easy task, and requires careful class organisation and frequent discussion between the teacher and individuals or small groups of pupils.

One major objective for this exercise is for pupils to use the research strategy they learn in new situations later. For this to occur students need to be made aware of the way they are thinking. It is not enough to provide students with strategies if they have not got some ability to monitor and evaluate the strategies they have learnt.

Supportive Self Study appears to be a way of teaching the research skills which also helps students to reflect on the strategy they are adopting, and helps them to monitor and evaluate their learning.

Supported Self Study is a form of resource based learning, or independent learning, but the emphasis is on helping the students to manage the learning process through tutorials. Students follow carefully prepared, structured material and work independently, but in addition regular tutorials in small groups are aimed to help the students learn more effectively. A tutorial should involve contract making between teacher and pupils, with a plan of work to be completed, and a review and assessment of work already completed.

About the materials.

The materials here are based on work done by the British Library and the Education Department of Western Australia. They allow pupils to work on their own piece of research at their own pace. The "Research Process" has been divided into eight clear stages. For each stage of the research process a Help Card has been produced which tells the pupils what is expected of them. Pupils can turn to the next Help Card once they have completed a stage of the process.

It is important that the teacher can organise things so that regular tutorial sessions can be held with small groups of pupils. In each tutorial session (a) the teacher can elaborate on the instructions given on the Help Cards, (b) any work already carried out by the pupils can be evaluated, (c) contracts (written or verbal) can be agreed about what work is to be done next.

It can't be emphasised enough how important these tutorial sessions are. At the same time it cannot be claimed that to fit them in while controlling a class in the library is easy.

The material is presented for the teacher in a way that should make reading it very easy.

1. First there is an overview of what the Research Process looks like.
2. Then, each of the eight stages is explained in more detail with the Help Card relevant to that stage adjacent to the explanation.
3. A number of copies of the Help Cards are stored in a plastic envelope for use by the pupils.

NB. You may find that all this insults your intelligence as you are already a competent library user, and you already know all the stages of the research process. I think that the value of this package is that it breaks the process down into stages which are manageable for the pupils, and it recommends a teaching style which allows pupils to get as much as possible out of the experience.

STEP 1. What am I going to write about?

The most difficult task pupils will have with this piece of work will be choosing a topic for research. It is likely that many pupils will select a subject which is too broad. Some pupils will not have anything which they are interested in. The introductory tutorials should be spent helping pupils to select manageable subjects for research, and reducing the scope of each subject if necessary.

Even when the scope has been reduced some subjects chosen for research will lack any focus. Consequently, pupils are asked to define their research as a question which has to be answered.

EXAMPLES:

Football - What coaching course could be offered to a school football team?

How could crowd safety be improved at football grounds?

Animals - What types of animals are most suitable as household pets?

How do various wild animals adapt to their environment?

Once the question has been finalised, it is necessary for the pupils to define their audience. The anticipated audience should influence the pupils' choice of information, structure and presentation. Is their product to be read by experts in the field or people with very limited knowledge? Is the audience made up of adults, their peers, or even younger people?

NB. *The success of this piece of work rests on the appropriateness of the topic chosen for research. This first Step is probably best tackled as a class lesson, with the teacher fine-tuning all pupils' research proposals.*

Step 1. What am I going to write about?

1. Think of a subject that you are interested in.

2. Think of an interesting question which you can ask about the subject you have chosen. You will try to answer the question by carrying out some detailed research.

3. You also need to decide at this stage who will be reading what you are going to write. Will they be experts in the subject, or people who know very little about the subject? Will they be adults, or people of your own age, or even people younger than yourself?

TURN OVER FOR SOME EXAMPLES OF SUBJECTS AND QUESTIONS.

EXAMPLES OF SUBJECTS AND QUESTIONS.

1. SOME SUBJECTS.

Football, Animals, the Environment, Education, House design, Science, Parenthood.

2. SOME QUESTIONS.

Football (a) *What coaching course could be offered to a school football team?*

(b) *How could crowd safety at football grounds be improved?*

Step 2. How do I get the information?

It is often assumed when setting research tasks for pupils that the school library has all the necessary information. However, there are many resources beyond the school library. If the pupils are made aware of what sources are available, *and are encouraged to use those that are appropriate*, the pupils' research is likely to be more fruitful.

Some possible resources for all pupils to consider.

The school library.

Public libraries.

Tourist Information Centres.

Local societies and associations listed in the Yellow Pages.

Museums.

Ceefax and Oracle.

Magazines and newspapers.

Television and videos.

People with experience.

NB. *We should persuade pupils to use as many of these resources as possible, when the resources are relevant.*

Step 2. How do I get the information?

You know how to use the school library to find information. However, there are many other sources of information beyond the school library. How many of these do you think would have information that will be useful to you?

The Public Library.

The Tourist Information Centre.

Local societies and associations listed in the Yellow Pages.

Museums.

Ceefax and Oracle.

Magazines and newspapers.

Television and videos.

People with experience.

NB. There will be many other sources of information that have not been listed here.

Step 3. Finding information in the library.

The pupils should already have experienced listing *key-words* to help them research a subject, and they should also be able to use the *Subject Index*. This Step asks them to do both of these. While most pupils will, have no difficulty making a list of key-words, many pupils will need to be encouraged to explore all of their key-words through the Subject Index. Some pupils will be pleased to find only one or two general books on the subject they are researching.

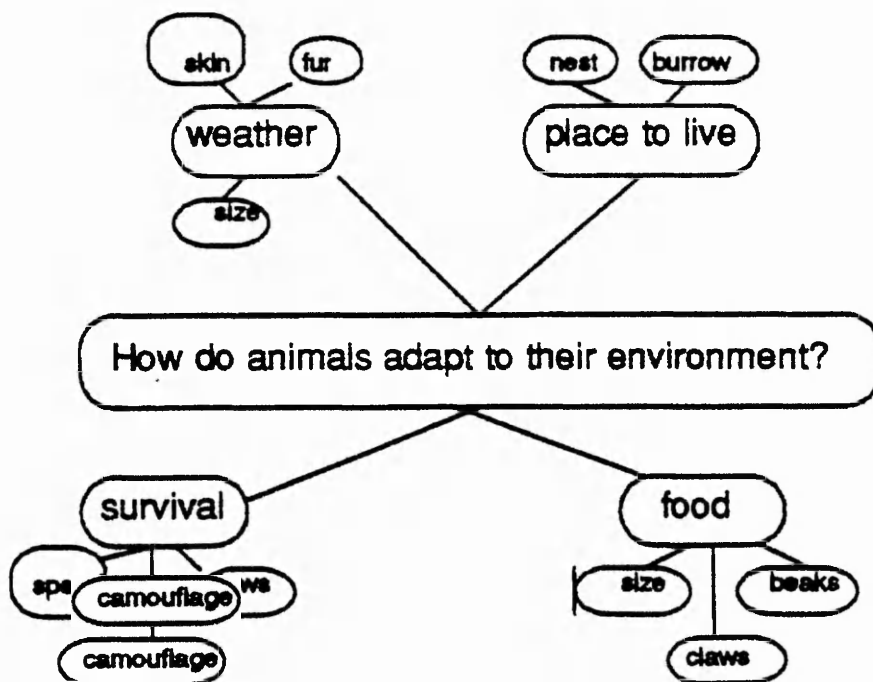
NB. At this stage pupils may need to be reminded of the value of the reference books, including the encyclopedias.

Step 3. Finding information in the school library.

1. List as many words as you can that have something to do with the subject you are writing about. These can be called key-words.
2. Use the Subject Index. Look up the catalogue number for each of the words you have listed. Using these numbers check the shelves to see if there are any books with information on the subject you are researching.
3. Check all the reference books.
4. Check all the magazines.

REMEMBER: *You have already thought about all sorts of other sources. Do not rely on the school library for all your information.*

TURN OVER FOR AN EXAMPLE OF KEY-WORDS ON A SUBJECT



Step 4. What resources should I use?

Pupils who have used the Subject Index effectively may find that the number of sources that they have found is too large for them to process. They will need help to select intelligently from the sources available to them.

(a) The use of Index and Contents Page will help them to see whether a book has any relevant information.

(b) A glance through a book will help pupils to see whether the language of a book is appropriate for them.

(c) It may be possible at this stage to introduce ,or revise, the skills of skimming and scanning so that pupils do not waste time reading text that is irrelevant to their needs.

Step 4. What resources should I use?

You should now realise that there are many different sources of information available to you. However, you will find that some of them are not really appropriate for you. A book may look as though it is about the subject you are researching, but it may not actually have the information you want. Also, a book may be too difficult for you.

You need to have ways of checking through sources, whatever they are, to see whether they will be useful to you.

- 1. If there is an index check it carefully to see how many of your key-words are listed.*
- 2. If there is a contents page check it carefully to see how many of your key-words are listed.*
- 3. Read one or two paragraphs to see whether the writing is too difficult for you.*
- 4. Is the resource out of date? Does that matter?*

NB. These are not the only ways of checking a source. Use any method at all which will save you having to read all the way through a source to see whether it will be useful.

Remember that sources that are not printed on paper, such as videos and audio tapes, can also be checked in similar ways.

Step 5. What shall I make a record of?

Note-taking is likely to cause problems for some pupils.

1. They will not be selective in their reading.
2. They will not be selective about the information they record.
3. They may find it difficult to write the notes in their own words.

There is no **correct** way to make notes. Research has shown that we do not all think the same way, and consequently we do not record information the same way. It is important to give status to any successful method of note-taking that pupils use.

It may be possible to use this Step to introduce various methods of note-taking and to discuss the methods currently being used by pupils.

NB. Pupils should record their notes on one side of each page only, whether they are using file paper or exercise books. This will enable pupils to physically organise their notes prior to writing them up into continuous prose. (Those using exercise books will have to rip out all of the pages they have used before they can physically organise them).

STEP 5. What shall I make a record of?

You will now need to carefully read all the information that you think will be relevant, and make notes on what information is relevant to you. There is no correct way to make notes. If you have a system that you are happy with then continue with it. If you are not confident about note-taking please ask your teacher about it

Follow these steps.

1. Skim through the books you choose, so that you only have to read the bits that are relevant to you.
2. Make notes of any information you want, but do not copy out sections of books. Write the information in your own words.
3. Make sure that any information you write in your exercise book will help you answer your research question. **If it does not, why are you writing it down?**

NB. When you are making notes, write on one side of each page only. Later, you will be able to huffle all the pages around when you are organising them.

STEP 6. Have I got all the information I need?

This stage is all about interpretation, reflection, analysis, and synthesis. It is clearly the most difficult part of the research project, and will need the most help from the teacher.

At this stage in their research, pupils should have a collection of notes related in some way to the question they are researching. To ascertain whether they have got all the information they need to answer their question the pupils need to organise their material with some sort of structure. Once the material is organised it should be possible to see whether enough information has been obtained. It should also be possible to see what information, if any, is not really relevant to the research question.

However, ultimately all the teacher can do is to give time and encouragement for pupils' personal organisations and interpretations. The golden rule is anything that does not help to answer the research question should be omitted. Pupils will be keen to include all of the information they have collated, and clearly this will not produce an effective piece of writing.

NB. It cannot be stressed strongly enough that this step of the process is the most difficult, for the pupils and the teacher. There is no easy sequence of steps to be followed. There is not only one correct way to organise any body of information. If pupils are to be successful with this step they need to be tutored very carefully.

STEP 6. Have I got all the information I need?

You began this piece of research by thinking of a subject that you were interested in, and then thinking of a question on that subject. Then you collected lots of information which would help you answer the question. Your task now is to organise all the information you have so that you can answer the question you set yourself.

1. Rip out all the pages of your exercise book and put all of the information in small piles. Each pile will contain information on one part of your answer.
2. Look carefully at all of the piles. Is there any information that does not help you to answer your question? If there is, put it somewhere for safe keeping. You do not need it for this piece of work.
3. Each pile of notes will be used to write one section of your answer. Put your piles in the order you think they should come in your answer.
4. Do you think you have enough information now to fully answer your question?

(a) If you have you can move on to the next step.

(b) If you haven't, you will need to collect some more information before you go onto the next step.

**TURN OVER FOR AN EXAMPLE OF A QUESTION, THE PARTS OF THE ANSWER,
AND THE ORDER THE PARTS WERE PUT IN.**

♦ *The reverse of this card can be found on the next page.*

Subject: Fishing.

Question: What information should be given to someone who wants to start

fishing as a hobby?

Key Words: Roach, chub, canals, lakes, sea-fishing, clothes, baits, sharks, umbrella, tackle-bag, rivers, rod net, hooks

Piles: *roach, chub, sharks*
 clothes, umbrella
 canals, lakes, rivers, sea-fishing
 net, hooks, rod, tackle-bag

Order of piles.

- | | | |
|---|------------------------------|---|
| 1 | Basic equipment: | <i>rod, hooks, net, tackle-bag</i> |
| 2 | Basic clothing: | <i>clothes, umbrella</i> |
| 3 | Different types of fishing: | <i>rivers, lakes, canals, sea-fishing</i> |
| 4 | How to catch different fish: | <i>roach, chub, sharks</i> |

Step 7. How should I present it?

Within a school, pupils will be asked to research subjects with various outcomes in mind. A written report may be required, or an oral presentation may be expected. The final outcome could be a tape/slide presentation or a video. Whatever the outcome the research process will still be the same. Whatever the outcome pupils will need to give some thought to the following aspects of presentation.

Clearly, the biggest influence on the presentation is the perceived audience. Pupils were asked to consider their audience in Step 1. Decisions about the information to be included, and the language used, will be influenced by the intended audience.

Other aspects of presentation, such as diagrams and pictures, need to be considered.

The use of sub-headings and chapters needs to be considered.

All outcomes will need an introduction and conclusion.

Pupils will probably need most help to ensure there is a logical progression of their ideas. Some pupils will find it difficult to link the various stages of their "answer" so that a logical "argument" is presented.

Each style of presentation will also have its unique qualities which will need to be considered. (For example, a pupil producing a tape/slide presentation will need to consider how to indicate when to move on to the next slide). However, these various considerations are beyond the aims of this booklet. *The wording of the rest of the booklet assumes that pupils are aiming towards a written outcome.*

Step 7. How should I present it? -

You have got all the information you want, and you have sorted out what order you want to present it in. Now you need to make some decisions about how you are going to present your information. These are some of the things you will need to consider.

1. At Step 1 you decided who you would be presenting your information to. Look back to remind yourself. You will need to think carefully about what information that type of person needs. You will also need to think carefully about the words you use - will that type of person understand the words that you are using?
2. You will need to think about how helpful diagrams and pictures will be.
3. You will need to think about whether sub-headings and chapters will be helpful.
4. You must write an introduction, to warn readers what you have written about and who you expect to read it. You must also write a conclusion - this will summarise what you have written about, and readers can read it to check whether they have understood all the main points you have presented.
5. When you have finished your writing, you should ask someone else to read through your writing to see whether they understand it all. *Ask someone who does not know anything about the subject you have written about.*

TURN OVER FOR AN EXAMPLE OF AN INTRODUCTION AND A CONCLUSION.

This piece of writing has been written for someone who is about 13 years old, and is a good reader.

Subject: *How should we punish people who commit serious crimes?*

Introduction.

" Many people think that there has been an increase in violent crimes in recent years. Many people think that to control the problem prison sentences should be longer, and that hanging should be brought back. This article :

are on (a) looks at the facts and figures to see whether violent crimes the increase;

(b) looks at the various ways we can punish people for committing violent crimes;

(c) makes suggestions about the best ways to deal with people who commit serious crimes.

Conclusion.

" Figures show that there has been an increase in violent crimes in recent years. Different people have suggested different reasons for this. However, I do not think that longer prison sentences, or hangings, would improve the situation. More policemen, better housing conditions, more jobs, and more concern from parents about their children would all help to reduce the problem."

Step 8. What have I achieved?

As there are a number of objectives for this project, there is a great deal to assess. This should involve teacher **and** pupil assessment. If this was the first time that pupils have been led through the process, then the process was the most important thing, and so the pupil assessment sheet focuses entirely on the stages of the research process. However, teachers are likely to want to make some assessment about the pupils' understanding of the subject they have researched, particularly if this is **not** the first time that the pupils have been led through the process.

From the pupils' self-assessment they should come to some understanding of (a) how far they understand the research process and (b) which skills need to be improved.

It is important that the pupils' assessment sheet is shown to the pupils very early on in the project so that (a) they can obtain an overall picture of the process and (b) they can see that they will be assessed on the process as well as the outcome. Teachers may wish pupils to fill in their self-assessment sheets after each Step, or at the end of the whole process.

What have I achieved?

You should now have finished writing up your research. I hope you are pleased with the results. Now, put a tick in the appropriate column, to show how confident you feel about each Step of the research process. If you are not confident about any Step, write on a piece of file paper what you will need to do to become more confident.

	Very Confident	Confident	O.K.	Not Confident
Choosing a subject to research.				
Making a list of key-words.				
Using the Subject Index.				
Using other sources: Reference books				
Newspaper articles.				
Magazines.				
Local societies.				
Local libraries.				
Television.				
Other people.				
Selecting suitable sources of information.				
Skimming and scanning.				
Writing notes .				
Organising your notes.				
Writing an introduction.				
Writing a conclusion.				
Writing your article.				

Any other comments.

Appendix C.

Correspondence Between Dennis Fox and the N.C.C.



Nottingham
Polytechnic

Faculty of Education
Department of Primary Education
Head - Professor G H Bell
MA DipPhilEd DipPrimEd CertEd

Our Ref: DF/JT

18 December 1990

Mr Duncan Graham
National Curriculum Council
15-17 New Street
YORK
YO1 2RA

Dear Mr Graham

I have for some time had an interest in the way certain kinds of skills are transferred from one context to another.

The Curriculum Guidance No 3 (page 3) lists six of these skills and asserts that all of them are transferable. I am particularly interested in the third of these, ie "study skills" and I would be most grateful if you would give me some indication of the evidence on which this assertion of transferability is based. Clearly much will depend on the degree of difference in the contexts over which the skills might transfer. Perhaps the NCC has a project which is investigating the transferability of these skills. If so I would be pleased if you could put me in touch with the people involved.

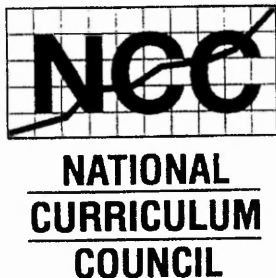
Yours sincerely

DENNIS FOX
Principal Lecturer

Director and Chief Executive Professor R Cowell BA PhD

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Deputy Chief Executives: Chris Woodhead MA

Peter R Watkins MA

Our Ref: JHW1652SHJ

15 January 1991

Mr D Fox
Principal Lecturer
Department of Primary Education
Nottingham Polytechnic
Clifton Hall
Clifton Village
NOTTINGHAM
NG11 8NJ

Dear Mr Fox

RE: STUDY SKILLS

Thank you for your recent letter to Mr Graham concerning Study Skills.

In March 1990 NCC published its advice to the Secretary of State on Core Skills 16-19. I attach a copy of the publication for your information. You will note that in Core Skills 16-19 'Study Skills' have been included under the broader definition of 'Personal Skills'.

Council is currently undertaking further work on definition and transferability of skills across the 5-19 curriculum. NCC has, however, not yet issued any further statement.

You might find it useful to contact the Training and Education Directorate at Moorfoot, Sheffield, S1 4PQ (formerly the Training Agency) who were involved in a project on Study Skills.

I hope this is helpful.

Yours sincerely

A handwritten signature in cursive script, reading 'Jenny Hall', is positioned above the typed name.

Jenny Hall
Assistant Chief Executive

Appendix D.

Self-Assessment Sheet.

What have I achieved?

You should now have finished writing up your research. I hope you are pleased with the results. Now, put a tick in the appropriate column, to show how confident you feel about each Step of the research process. If you are not confident about any Step, write on a piece of file paper what you will need to do to become more confident.

	Very Confident	Confident	O.K.	Not Confident
Choosing a subject to research.				
Making a list of key-words.				
Using the Subject Index.				
Using other sources: Reference books				
Newspaper articles.				
Magazines.				
Local societies.				
Local libraries.				
Television.				
Other people.				
Selecting suitable sources of information.				
Skimming and scanning.				
Writing notes .				
Organising your notes.				
Writing an introduction.				
Writing a conclusion.				
Writing your article.				

Any other comments.

Appendix E.

Information Sheets Provided for the Transfer Task.

Abortion

- 'premature expulsion of the foetus from the womb'.
- 'operation to cause this'.

ABORTION ACT 1967

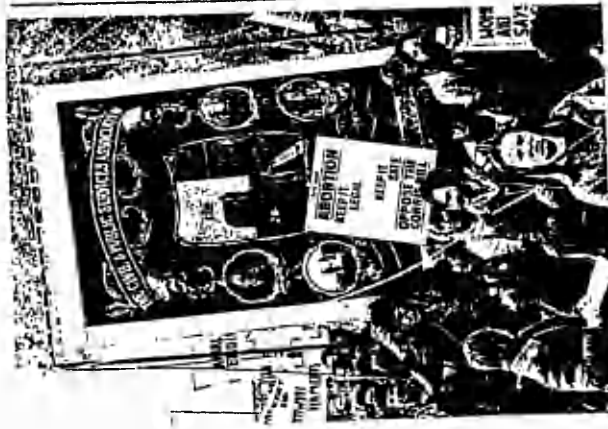
For many centuries it was regarded as a serious crime to destroy a baby in its mother's womb. In 1967 Parliament passed a law stating that it was no longer a criminal offence for a pregnancy to be terminated by a doctor, if two doctors agreed on either of these two conditions:

- 1 that it may on with the pregnancy would involve a greater risk to the life or the physical or mental health of the mother, or of her existing children, than if she had it terminated
- 2 that there was a substantial risk that if the child were born it would suffer serious physical or mental handicap

Before 1967 abortion was illegal unless there were very exceptional circumstances. So if a woman wanted an abortion she had to go to a so-called 'back-street abortionist'. Between 40,000 and 200,000 'back-street' abortions took place in Britain every year. About 30 women on average died every year.

KEY ISSUE

When does life begin? At conception? During pregnancy? At birth? Is abortion morally acceptable?



A pro-abortion march

Development of the foetus

- 25th day - heart beating.
 - 28th day - legs and arms begin to form.
 - 6th week - bones appear.
 - 7th week - fingers, thumbs forming.
 - 10th week - organs nearly formed.
 - 12th week - vocal chords, sexual organs form.
 - 16th week - half its birth length.
 - 5th month - eyebrows, eyelashes begin.
- Premature babies born as early as 25 weeks.

VIEWPOINTS

'Women must have control over their own lives. For this we must have control over our own bodies ... Abortion must become freely available to all women who want it. We must be able to have children when we want them, and children have the right to be wanted.'

(Women's Abortion and Contraception Campaign Manifesto)



Activity of LIFE supporters

'Since human life begins at conception, i.e. fertilization, and since all human life should be equally protected by the law from conception to natural death, whether or not the human being concerned is wanted or handicapped, it follows that the destruction of unborn life is always wrong.'

(Save the Unborn Child, LIFE)

'Humanists regard abortion as better than bringing unwanted babies into the world. It is a mistake to say that Humanists are in favour of abortion; no one can be in favour of abortion, which, except in unforeseen circumstances, is the result of failed contraception. We think there will probably always be a certain number of unplanned pregnancies and that the mothers concerned should have the complete choice of either early abortion, or keeping the baby.'

(Humanist Dipper)

'We have been created by Almighty God in his own image and likeness. No pregnancy is unplanned, because no baby can be conceived unless Almighty God intends that conception and has willed that particular unique and completely individual new person into existence. What has actually happened in our society is that clever arguments have convinced those with no anchor of belief in God to cling to that merciless slaughter of unborn babies is morally justifiable, and even essential for the happiness of the individual and the good of society.'

(Catholic Truth Society)

'The Anglican view on abortion is that although the foetus is to be specially respected and protected, nonetheless the life of the foetus is not absolutely sacrosanct if it endangers the life of its mother.'

(Church of England report, 1984)

FOR YOUR FOLDERS

- Explain the 1967 Abortion Act
- Briefly explain why the organizations LIFE and Women's Abortion and Contraception Campaign hold the views they do on abortion.
- What is the Humanist view and why do Catholics believe that it is wrong?

THINGS TO DO

- In groups of three to four discuss reasons for and against abortion, then write your reasons down and compare them with those of the rest of the class

THREE VIEWPOINTS

Humanists say:

Abortion should be available on request.

The Catholic Church says:

Abortion is a sin in all cases (unless a woman is going to die).

The Protestant Church says:

Abortion in certain cases is acceptable.

TALKING POINTS

• 'If you demake a mistake, don't destroy the life... because also to that child God says: I have called you by your name; I have carved you in the palm of my hand; you are mine.'

• 'Circumstances which may often justify an abortion are direct threats to the life or health of the mother, or the probable birth of a severely abnormal child. The woman's environment should be considered, including children for whom she is already responsible and offensive social conditions of bad housing and family poverty.'

(Methodist statement, 1960)

FOR YOUR FOLDERS

! This section has been concerned with the 'rights' and 'wrongs' of the abortion issue. By now you will have formed your own opinion. Try to express them in the form of a letter to a Church, or to LIFE, or to the National Abortion Campaign.



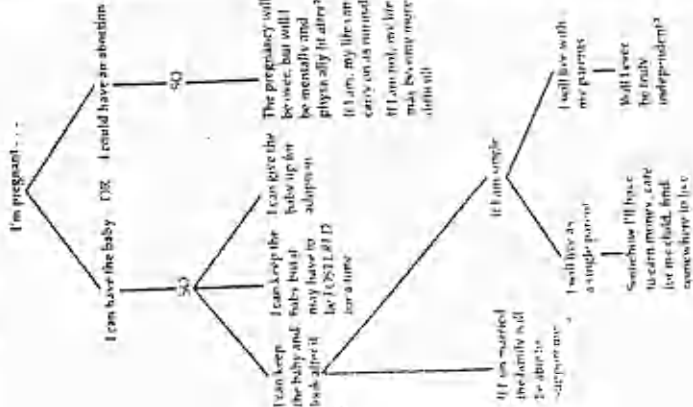
! AMMUNITION FOR A CLASS DEBATE: THE CASE AGAINST ABORTION

- modern science proves that the unborn child is a separate human being from conception. It is never just a part of his or her mother's body
- by allowing abortion, society is taking the easy way out. It should concentrate on improving the quality of life in society
- even in the womb the unborn child has a right not to be killed
- people with the most awful handicaps can lead happy, creative and fulfilled lives
- abortion is discrimination against the weak
- abortion is not just a matter of 'religion' - it is about murder, injustice and the denial of human rights. The UN Declaration of the Rights of the Child states that children need protection before, as well as after, birth
- unborn babies are unique, different, they have potential personalities
- every aborted foetus was a potential human being, perhaps even a Beethoven or an Einstein
- abortions can go wrong. They can leave terrible mental and physical 'scars' on a woman
- if abortion is acceptable, where do we draw the line? Abortion is a form of infanticide
- if society did more in the way of contraception and education, and helped single mothers by providing counselling and places where they could seek advice, abortion would not be necessary
- killing is killing, whether done in back-streets or openly



! AMMUNITION FOR A CLASS DEBATE: THE CASE FOR ABORTION

- every woman has the right to choose
- abortion is often a lesser evil than overcrowding, homelessness, the problems of bringing up too many children, not having enough money for another child, the end of a career
- it is more of a trauma giving up a child for adoption than having an abortion
- the population explosion will not be solved by making abortion illegal
- if a child is going to be severely handicapped, the parents should be allowed to choose whether they want an abortion
- a foetus is not a human being in the true sense. Life begins at birth
- even if abortion were made a crime, thousands of women would still risk their lives and health in back-street abortion clinics
- if a woman is raped and becomes pregnant then abortion is the most humane way of helping her. The same goes for a woman made pregnant because of incest or a mentally deficient girl who gets pregnant; or a schoolgirl of, say, 14, what if the mother will die if she doesn't abort the foetus?
- the foetus feels nothing when it is aborted
- if you don't believe that life is a 'gift' from God then you shouldn't be forced into doing something that people with a faith want you to do
- abortion is an act of responsibility in that it gives people the right to choose
- every child has the right to be a wanted child. Abortion saves thousands of children from being unwanted, and saves society from many problems.



THINGS TO DO

- This is only a very brief summary of the choices. Discuss them in pairs or groups of three and then write down some of the problems that these choices might create.
- Organize a class debate on the arguments for and against abortion, using the 'ammunition'.

Appendix F.

Section 1. Materials to help illustrate how Tim transferred library research skills.

Section 2. Materials to help illustrate how Joanne developed library research skills, failed to engage in metacognition in the transfer task and failed to transfer her library research skills.

Section 3. Materials to help illustrate how John failed to develop any library research skills, failed to engage in metacognition and failed to transfer any library research skills.

Section 4. Materials to help illustrate how diary entries, self-assessment responses and interview responses provided evidence that Rachel engaged in metacognition.

Section 5. Materials to help illustrate how Mandy learned library research skills, engaged in metacognition but failed to transfer her library research skills.

Section 6. Materials to help illustrate (i) how colleague observers, photographs and research diary entries can be used for triangulation, and (ii) how research diary entries can aid reflection.

Appendix F. Section One.

Materials to help illustrate how Tim transferred library research skills.

- (a) Sample of essay, on the subject of the Vietnam War, produced during English lessons.
- (b) Self-assessment sheets.
- (c) Sample of essay, on the subject of abortion, produced during R.E. lessons.

Introduction

The Vietnam war took place between 1965 and 1975. It started when North Vietnam attacked south Vietnam. It was ended by public protest in America.

The Viet Cong (VC) were from the north and were ruled by a communist regime but few people in the VC or National Vietnam Army (NVA) were communist! What astounded the Americans most about the VC enemy was the simple endurance, how could he absorb such punishment and undergo such hardship without cracking? For the individual VC guerrilla was the rock on which the American enterprise in Vietnam foundered.

V

The Army of South Vietnam (ARVN), trained and armed by the US they faced certain crisis when they took on the VC. Dressed in cut down US uniforms, boots or sandal's made from rubber tyres and American steel-pots that were too big, they carried US weapons, rode in US 'choppers' and M113's. But to many American servicemen, the ARVN looked little different to any other mess. Still in 1966 they were in the 'Paddy fields' together.

+

The Americans didn't have a great deal of public support later on in the war and it was this that made them withdraw from the war and let the VC take over Vietnam. Most of the Americans were very embarrassed because of the few civilians back home who didn't like it and they caused a wave of public protest but that's the price of Democracy!

This project gives a brief resume of the war and it's hardships;

The contents of the following pages give an account of the horrors of war, some aspects you may find disturbing!

2 : LANDING ZONES

Being fired on in a landing zone

Helicopters and gunships won victory in the battles of November 1965 but riding a helicopter into a hot landing zone was always a terrifying experience!

A rifle company of the 1st Cavalry Division (Airmobile) have spent a long hot morning slogging through second growth jungle. After five days in the field they are heading back to base camp for a day's rest. They aim to reach the Pickup Zone (PZ) by noon. They dream of letters from the family, a cold beer and a refreshing shower, but first things first. The platoon leader is up front checking the PZ. Everything is deadly silent apart from the low drone of helicopters in the distant.

Suddenly there is a crackle on the radio. The radio operator gives the headset straight to the platoon leader. The company commander wants to talk. It's bad news. The entire outfit has been alerted for a 'quick reaction eagle flight'. The platoon is to secure the PZ.

Ten minutes later the company commander and three other platoons come from the jungle, they are hot and bothered and very short tempered. The men are put into 'six man' groups, ready to go up into a 'slick'. The platoon commanders are briefed. The air calvery have spotted a VC unit near a village they don't know how big they are but they have fired on the scout helicopter! Gunships are raking the enemy. The 'cav's' infantry platoon has been committed, but the enemy is pouring heavy fire on them. The company are to make a combat assault on the battle zone. The company commander will take charge of the battle, develop it and secure a LZ for a larger force if necessary. A battalion commander is already over the scene.

The LZ is big enough for 10 'slicks'. The company will go into two 'lifts', with two minutes between them. The first 'lift' is in five minutes. On landing three platoons will fan out from the LZ. Company headquarters and the fourth platoon will remain in the centre, then move towards the heaviest fighting. 'Brief your men,' shouts the company commander 'and lets get going.'

5 : CONCLUSION

Although the war has been over for many years now some Americans still can't get jobs, maybe because they have a physical injury to their face or they are missing a limb, or even if they have a mental condition they are 'cast outs' in society, even by the ones that campaigned hard to stop the war!

Should the cameras have ever been there, did they loose the war for America?

What about the Viet Cong were they worse than the Americans, should we pay tribute to their courage?

Even while you read this some Veteran soldier is waking up with a nightmare!

IMAGINE YOU ARE AN AGONY AUNT/UNCLE WRITING FOR A COSMOPOLITAN. YOU HAVE RECEIVED A LETTER FROM A SEVENTEEN YEAR OLD. CONCERNING HER WORRIES ABOUT HER BEST FRIEND WHO IS FOURTEEN WEEKS PREGNANT AND KNOWS THAT HER UNBORN BABY IS HANDICAPPED. THE LETTER STATES THAT AN ABORTION IS DESIRED. COMPOSE YOUR REPLY.

AS A CHRISTIAN, THE AUTHOR IS VERY UNSURE OF THE ADVICE SHE/HE SHOULD GIVE. CAN A CHRISTIAN EVER JUSTIFY HAVING AN ABORTION? GIVE REASONS FOR YOUR ANSWER.

Thank you for writing to me regarding your friend I was pleased to read that you are concerned about the welfare of your friend and her baby. I am not in the position to tell you whether your friend should have an abortion but I can try and help her to make up her mind.

Abortion means the termination of a pregnancy before the 24th week. The length of time had been dropped in 1989 from 28 weeks to 24 weeks. If the termination of the baby is done by the doctor it is called a therapeutic abortion. If the pregnancy naturally ends it is called a spontaneous abortion or a miscarriage.

Just to give you an idea of how many abortions are carried out in Britain by doctors, in 1986 there were 172,286 planned abortions.

There are many risks in having an abortion these are infections (in some 3.6% of cases), prolonged bleeding (in 4%), and abnormal blood clotting (in 0.5%). These are very small risks.

Another side effect of having an abortion is the psychological damage brought on by regret, guilt and depressive feelings.

Abortions had been carried out before the 1967 abortion act was passed. Often at great risk of the mother's health. It was estimated that 150,000 illegal abortions were carried out each year. If this figure is correct then making abortions legal has not greatly increased the number of abortions performed, it has just made them safer.

Up until 1957 women have campaigned to make abortions legal so that the need for dangerous backstreet abortions would not be necessary

On the 27th October 1967 the abortion act was passed. This meant that abortions had been made legal. Only doctors can perform an abortion for it to be legal.

The law requires that two doctors should agree that a woman is entitled to an abortion if one or more of the following conditions are satisfied.

- A) That there is a risk of the mother dying if the pregnancy is allowed to continue.
- B) That there is risk of injury to the physical or mental health of the mother if the pregnancy is allowed to continue.
- C) That there is risk to the existing child or children of the mother if the pregnancy is allowed to continue.
- D) That there is evidence of substantial physical or mental abnormality in the unborn child.

No religion actively supports abortion. But some religions are more prepared to accept that there are times where abortion may be needed.

The Roman catholic church are against abortions this is made very clear from the quotation which follows, "The direct interruption of the generative process already begun, and, above all, directly willed and procured abortion, even if for therapeutic reasons, are to be absolutely excluded as licit (lawful) means of regulating birth." (Papal encyclical, Humanae vitae, 1968.)

In Jewish law abortion is discouraged but when someone is in danger of dying it is allowed.

In 1985 the Bishop of Birmingham asked the house of lords if the time limit for an abortion could be taken down from 28 weeks to 24 weeks this shows that not all religions are against abortions. On the 26th January 1987 the Right Reverend Hugh Montefiore said to the Independent "I am not an absolutist. I recognize that there are situations where abortion is right. People say that only 33 babies over 24 weeks' gestation were aborted in 1985, but the numbers are not relevant. I am very surprised that anyone should think 33 babies are not worth saving."

I think that the baby also has its own rights but when do these rights start. This is a very hard question to answer. The Jewish law says that life starts only at the moment of birth. But the anti-abortion groups say that the babies rights start when the egg is fertilized.

Doctors also have there own views about abortion and some do not want to perform the task of carrying an abortion out. A doctor cannot lose his/her job if they do not want to perform an abortion. In 1967 it was said that "no doctor or nurse shall be in danger of losing their job if to perform an abortion is against their will."

Medical advances in the last decade have meant that babies born as early as 23 weeks can now survive, this has called into question the time limits put on abortion in countries where the procedure is legal. But the results of the tests for abnormal babies, which parents may decide to terminate, are frequently not available until after 18-20 weeks of pregnancy. So demands to reduce the limit for abortion could

put these tests in jeopardy or at least give the parents very little time in which to make a major decision.

I received your letter last week and your friend is now in her 15th week of her pregnancy and has already had a test to see if the baby is handicapped or not. The results of the test have shown that her baby is handicapped and she has now started to wonder whether to have an abortion or not. This is why you have written to me. Unfortunately you never mentioned if your friend has got any religious beliefs. This means that I cannot say what her religion would say about this subject, so I have tried to cover a range of different views. I have given you a lot of reasons for and against abortions, but there is one point which I have not covered, that is the rights of the mother.

I think that the mother should also have a say in whether to have an abortion because she is the person who has to look after the baby and help it through its life. Having a baby brings a lot of pleasure and they say that handicapped children are more loving but they are dependent on you for the rest of your life. so the mother of a handicapped child would have to be very caring with a great deal of patience. There is always the worry about the child when the mother dies, what will happen? where will the child go?

To come back to your question whether your friend should have an abortion? I would advise her to go to her doctor and discuss the matter, the doctor would help her decide what is best for her.

Now I have given you all this information I hope it helps your friend make up her mind.

BIBLIOGRAPHY

Lets Discuss Abortion	by	Anne Charish
Medical Ethics	by	Jenny Bryan
Abortion	by	Jenny Bryan

Please don't rush this. Please think carefully before you put ticks anywhere. Please be as honest as possible.

Look at the list of research skills. Look at the headings of the three columns. Put ticks in the appropriate places.

	Already used it before the English project.	Used it for the first time while doing the English project.(OR used it properly....)	Used it while doing my RE essay.
List of key words.	✓		✓
Used the Subject Index.	✓		✓
Reference books	✓		✓
Newspaper articles	✓		✓
Magazines	✓		
Local Societies	✓		
Local Libraries	✓		✓
Television	✓		
Other people	✓		✓
Checked to see if sources were appropriate.	✓		✓
Skimmed and scanned.	✓		
Wrote notes in own words.	✓		
Reorganised the order of your notes.	✓		
Wrote an introduction.	✓		✓
Wrote a conclusion.	✓		✗

As part of the RE essay you have been doing, you have had to research into the subject.

While you were looking up information, did you think back to the research work you did in English? YES / NO ✓

Whether you answered yes or no to the question, put a tick against any or the following things you did when you looked up information.

Made a list of key words. ✓

Used the Subject Index. ✓

Used: Reference books ✓

Newspaper articles. X

Magazines. ✓

Local Societies. ✓

Local libraries. ✓

Television. ✓

Other people. ✓

Checked whether sources you found were suitable. ✓

Skipped and Scanned sources. ✓

Wrote notes. ✓

Reorganised your notes into an order which was helpful for your essay. ✓

Wrote an introduction. ✓

Wrote a conclusion. ✓

It was hoped that you would use some of the skills you used when you did your project in English. Can you explain briefly whether the project you did in English effected, in any way, the research you did for this essay.

It wasn't really appropriate, in this case

BUT

Thank you very much for your help. *that's o.k.*

Appendix F. Section Two.

Materials to help illustrate how Joanne developed library research skills, failed to engage in metacognition in the transfer task and failed to transfer her library research skills.

- (a) Sample of an essay, on the subject of witchcraft, produced during English lessons.
- (b) Samples from her diary, kept while writing the essay about witchcraft.
- (c) Sample of an essay, on the subject of abortion, produced during R.E. lessons.
- (d) Self-assessment sheets.

Introduction

For my project I decided to look into witchcraft. I mainly studied three aspects: giving information about witchcraft, its history and how it is performed using sources from books and peoples own views. In the three sections I have tried to give a fairly indepth account of these three areas.

Summary

Witch craft goes back as far as the stone age when women were thought to have great magical powers over the earth and formed a group called "Earth Mother cults" where spells were performed and magic performed.

Witches often appeared in children's books and fairytales when they were portrayed as old ugly women with tall pointed hats, witches were thought of as people to fear who did harm and turned people into frogs but this is not so, for they made spells to cure illness and help people. Only Black witches performed evil spells and curses.

Witchcraft is also known in the South American Indians who performed spells to keep bad evil spirits away, every tribe had its own witch doctor who was in charge of keeping illness away and protecting members of the tribe.

Witchcraft Today

Most people today either think of witchcraft as a load of nonsense or old ugly women saying spells over a children this was the fear from the premodern society and from people reacting to the world as it then was.

It's not until they read the subject as I have that they see the most seriously is now true. Indeed more people including myself are now aware to find that people all over the world are practicing witchcraft today either in covens or individually.

I myself have a deep interest in witchcraft and strongly believe in spell working but would never break the ethics of spell working which are:

- 1) Never work to harm anyone.
- 2) Never work to manipulate anyone against his or her own will or natural development.
- 3) Never assume you know all the factors involved in the situations or person you are working on.
- 4) Never work for your own gain at someone else's expense.
- 5) Word your spell precisely and carefully to leave no loopholes which may lead to harmful practices.

Summary

Witch craft goes back as far as the stone age when women were thought to have great magical powers over the earth and formed groups called "Earth Mother cults" where spells were performed and magic potions made.

Witches often appeared in children's books and fairytales when they were portrayed as old ugly women with tall pointed hats, witches were thought of as people to fear who did harm and turned people into frogs but this is not so, for they made spells to cure illness and help people, only Black witches performed evil spells and curses.

Witchcraft is also well known for the South American Indians who performed spells to keep the evil spirits away, every tribe had its own witch doctor who was in charge of keeping illness away and protecting members of the tribe.

What have I achieved?

You should now have finished writing up your research. I hope you are pleased with the results. Now, put a tick in the appropriate column, to show how confident you feel about each Step of the research process. If you are not confident about any Step, write on a piece of file paper what you will need to do to become more confident.

	Very Confident	Confident	O.K.	Not Confident
Choosing a subject to research.			✓	
Making a list of key-words.		✓		
Using the Subject Index.			✓	
Using other sources: Reference books		✓		
Newspaper articles.			✓ N/A	
Magazines.			✓ N/A	
Local societies.			✓ N/A	
Local libraries.			✓	
Television.			✓ N/A	
Other people.			✓	
Selecting suitable sources of information.		✓		
Skimming and scanning.		✓		
Writing notes .		✓		
Organising your notes.		✓		
Writing an Introduction.		✓		
Writing a conclusion.			✓	
Writing your article.		✓		

Any other comments.

Abortion course work

Introduction:

1
Imagine you are an agony Aunt writing for C. You have received a letter from a seventeen year old girl concerning her best friend who is 14 weeks pregnant and knows the unborn baby is handicapped the letter states that an abortion is required.

0 AS a christian the Author is very unsure as to the advice she should give!

Can a christian ever justify having an abortion?

0 I have presented the following piece of coursework as a reply to the girls letter in which I have tried to include as much information as possible and given advice I personally feel to be right from a Christians point of view. It is not stated in the letter which religion the girl in question is I have also briefly looked into the beliefs of other religions.

2
Firstly I would like to say that your friend is lucky to have a friend like you who has the sense to get as much advice as possible. deciding to have an abortion is a tough decision to make and your friend will need as much support as she can get. your friend is very young and finding out her unborn baby was handicapped will have been very painful for her.

Handicaps such as down syndrome and mongolism are caused by a congenital defect at conception of the unborn baby. those can usually be seen after 14 weeks when Amniocentesis can be performed. this is when a sample of amniotic fluid is taken from the mother. it is tested to see if it is lacking in chromosomes. chromosomes decide the sex of the child. there are 23 pairs in each. if there is a lack of chromosomes this means the child is most probably mongol or will have down syndrome.

But around 14 weeks deformities such as bodily abnormalities e.g. arms or legs missing can not be spotted as the foetus is so small and therefore can not be seen on the scan.

2 A new abortion act was brought in, in 1967 the law requires that

3
a woman can not have an abortion merely because she desires one. Two doctors have to both agree that the woman is entitled to an abortion either:

There is a risk of the mother dying if the pregnancy is allowed to continue. There is a risk of injury to the physical or mental health of the mother if the pregnancy is allowed to continue. That there is a risk to the existing child/children if the pregnancy is allowed to continue.

That there is evidence of substantial physical or mental abnormalities in the unborn baby.

3 The law did state that no abortion was to be performed after 28 weeks after conception but in 1984 this changed to 24 weeks after conception.

Religion plays a big part in the in's and out's of abortion. We are talking about human life but what makes a person human? Catholics believe that god

4 gives a foetus a soul and that this would make a foetus human and by having an abortion you would be killing a human and ending a life so really they see abortion as murder.

All religions believe life is a gift from god but it all depends on whether you believe life begins at birth or at conception.

Please don't rush this. Please think carefully before you put ticks anywhere. Please be as honest as possible.

Look at the list of research skills. Look at the headings of the three columns. Put ticks in the appropriate places.

	Already used it before the English project.	Used it for the first time while doing the English project.(OR used it properly....)	Used it while doing my RE essay.
List of key words.		✓	
Used the Subject Index.	✓		
Reference books	✓		
Newspaper articles	✓		
Magazines	✓		
Local Societies	✓		
Local Libraries	✓		
Television	✓		
Other people	✓		
Checked to see if sources were appropriate.	✓		
Skimmed and scanned.	✓		
Wrote notes in own words.	✓		
Reorganised the order of your notes.	✓		
Wrote an introduction.	✓		
Wrote a conclusion.	✓		

As part of the HE essay you have been doing, you have had to research into the subject.

While you were looking up information, did you think back to the research work you did in English? ☒ YES / NO.

Whether you answered yes or no to the question, put a tick against any of the following things you did when you looked up information.

Made a list of key words.

Used the Subject Index. ✓

Used:

- reference books
- newspaper articles.
- Magazines.
- Local Societies.
- Local Libraries.
- television. ✓
- Other people. ✓

Checked whether sources you found were suitable. ✓

Skipped and scanned sources.

Wrote notes. ✓

Reorganised your notes into an order which was helpful for your essay. ✓

Wrote an introduction.

Wrote a conclusion. ✓

It was hoped that you would use some of the skills you used when you did your project in English. Can you explain briefly whether the project you did in English affected, in any way, the research you did for this essay.

I didn't really give the English project a thought but did use skills that I learnt in English!

Thank you very much for your help.

Mr Pearce,

I haven't really had
any problems this lesson but
the two books on witch craft
in the school library are more
about the history of it but
I would like to cover the
more modern day witch craft
I'm going to next find people
views on witch craft and how
they feel about it how do you
feel about it?

Come and ask me if you like I'll have to
think about it.

Thank you!!

Mr Pearce,

I have got alot
of work done this lesson so
covered some more of the
words on the previous page and
have began to give some examples

Step 1

Witchcraft

28/2/91

What do people think of
Witchcraft?
Why were witches burnt at
the stake?
How is witchcraft performed?

Step 2

The public library
People with experience
Books (my own)

Step 3

①

Spells
Covens
Gods and Goddesses
Candles
Incense
Altars
Black and white witches (good & bad)
Magic circles
Crystals
Cult following
History of magic

Sources:

28/3/91

I had library,
my own Books
my own knowledge

I have gained about 20% more
information that I did know
before.

I want to present my work
on A4 paper
the cover will have the title
with pictures.
I'm going to put my work
into sections as follows:

most of the
sections will be
~~the~~ illustrated and
maybe boarded

All done with
the history of:
performing:

Witchcraft writeup ✓
Dictionary meanings ✓
~~witches~~ ~~substance~~ ✓
Witchcraft today ✓

Witches Substances ✓
Halloween ✓
Africa ✓
General History ✓

with
spell, etc
The old
colours
words
form

Appendix F. Section Three.

Materials to help illustrate how John failed to develop any library research skills, failed to engage in metacognition and failed to transfer any library research skills.

- (a) Sample of an essay, on the subject of "The Guinness Book of Records", produced during English lessons.
- (b) Sample from his diary, kept while writing the essay on the subject of "The Guinness Book of Records".
- (c) Sample of an essay, on the subject of abortion, produced during R.E. lessons.
- (d) Self-assessment sheets.

Tallest ever nawn man

Robert Wadlow weighing $8\frac{1}{2}$ lb at birth the adnormal growth of him started at the age of 2 years old, following a double hernia operation. His height progressed as followed.

Age	Height	Weight
5 years	5 feet 4 inches	105 lb
8 years	6 feet 0 inches	169 lb
9 years	6 feet $2\frac{1}{4}$ inches	180 lb
10 years	6 feet 5 inches	210 lb
11 years	6 feet 7 inches	- -
12 years	6 feet $10\frac{1}{2}$ inches	- -
13 years	7 feet $1\frac{3}{4}$ inches	255 lb
14 years	7 feet 5 inches	301 lb
15 years	7 feet 8 inches	355 lb
16 years	7 feet $10\frac{1}{4}$ inches	374 lb
17 years	8 feet $0\frac{1}{2}$ inches	315 lb
18 years	8 feet $3\frac{1}{2}$ inches	- -
19 years	8 feet $5\frac{1}{2}$ inches	480 lb
20 years	8 feet $6\frac{3}{4}$ inches	- -
21 years	8 feet $8\frac{1}{4}$ inches	551 lb
22 years	8 feet $11\frac{1}{2}$ inches	696 lb

1. Following severe influenza and infection of the foot.
2. Still growing to 9 feet during his terminal illness.

Tallest land animal

The giraffe which is now found only in the dry savannah and semi desert areas of Africa south of the Sahara, is the tallest living animal reaching an overall height of 5.5m or 18 feet. The tallest ever recorded was a masai bull, named George received at Chester Zoo on 8 Jan 1959 from Kenya. His horns almost grazed the roof of the 6.09m or 20 ft high Giraffe House when he was nine years old.

George died on 22nd July 1969. Despite its awkward appearance because of its long stride the giraffe is surprisingly swift and attain speeds of about 30 mph at a gallop.

Tallest tree

The Sequoia National Park in California U.S.A is the home of the largest trees in the world including the most massive living thing on earth, the Great Sequoia known as General Sherman which stands 275 ft tall and has a true girth of 83 ft measuring $4\frac{1}{2}$ ft above the ground.

Tallest hedge

The mickleour beech hedge in Perth, Tayside was planted in 1746 and has attained a trimmed height of 85 ft although some of its trees now exceed 105 ft. It stretches for 1804 ft.

Tallest office building

Dominating the New York skyline are the two gleaming towers of the world trade centre.

The 2063 ft building has an amazing 43,600 windows and is not such a gruelling task is imagined for cleaning all the windows. As there are fewer pollutants in the air at the top and wastes dirt from the upper windows and deposits it on the other windows.

This is a table to show the highest structures in Great Britain.

Feet	Place	Date
404 Ft	Salisbury cathedral Spire.	1305
525 Ft	Lincoln cathedral.	1307-1548
489 Ft	St Pauls Cathedral London	1315-1561
518.7 Ft	Blackpool Tower Lancashire	1894
562 Ft	New brighton Tower merseyside	1898-1919
820 Ft	GPO Radio masts Rugby.	1925
1000 Ft	ITA mast medlesham Suffolk	1959
1262 Ft	IBA mast emeley moor w. Yorkshire	1965-1969
1265 Ft	IBA mast Belmont Lincolnshire	1965
1272 Ft	IBA mast Belmont Lincolnshire	1967

What have I achieved?

You should now have finished writing up your research. I hope you are pleased with the results. Now, put a tick in the appropriate column, to show how confident you feel about each Step of the research process. If you are not confident about any Step, write on a piece of file paper what you will need to do to become more confident.

	Very Confident	Confident	O.K.	Not Confident
Choosing a subject to research.	✓			
Making a list of key-words.			✓	
Using the Subject Index.			✓	
Using other sources: Reference books	✓			
Newspaper articles.		✓		
Magazines.		✓		
Local societies.			NA	
Local libraries.	✓			
Television.			✓	
Other people.		NA		
Selecting suitable sources of information.		✓		
Skimming and scanning.		✓		
Writing notes.		✓		
Organising your notes.		✓		
Writing an Introduction.		✓		
Writing a conclusion.		✓		
Writing your article.	✓			

Any other comments.

I really enjoyed doing this project because it was a project that I was interested in.

Abortion Act 1967.11.9.91

I think any woman has got the right to choose if she wants an abortion or not. I mean it's her baby and she can do what ever she wants, as long as she doesn't harm the baby in any way. If the mother can get a career she will be much better off in the long run for the baby. I also think it would be so bad if the mother had an adoption than a abortion for the baby, because it's got another chance to lead a different life with his/her mother and father that will love and care for the child instead of a mother that doesn't want you or anything to do to do with you, especially if the baby is mentally handicapped, they may just want to forget that baby for ever. I think that it is wrong that a handicapped shouldnt be loved like a normal child is, You gave birth to this baby so does it really matter if it's handicapped or not, you should be supporting this baby, caring, and loving it if it is. I believe that a baby is not properly alive until it is born. Sometimes I agree on abortion and sometimes I don't I don't think I'd like to be aborted and new that my mum and dad didn't love me. Some people think that abortion is murder, killing a human being.

In foreign countries if the mother wants an abortion it is up to her. But in Britain people don't agree that it up to the mother.

The law requires that two doctors agree that a woman is entitled to an abortion, if one or more of the following conditions are satisfactory.

- a) There is a risk of the mother dying from the pregnancy were allowed to continue.
- b) There is a risk of injury to the physical or mental health of the mother if the pregnancy were allowed to continue.
- c) There is evidence of substantial, physical, or mental abnormality in the unborn child.

A defect which occurs at the conception of the unborn child, for eg, Down syndrome, or mongolism is another word for it.

NO abortion is to be performed after 28 weeks or after conception, (In 1989 this was dropped to 24 weeks after conception).

NO doctor or nurse shall be in danger of losing there jobs if to perform an abortion even if it is against there beliefs.

Development for the foetus.

25 day - Heart beating.

28 day - Legs and arms begin to form.

6th week - Bones appear.

7th week - Fingers thumbs forming.

10th week - Organs nearly formed.

12th week - Vocal chords, sexual organs form.

16th week - Half it's birth length.

5th month - Eyebrows, eyelashes begin.

Premature baby's born as early as 25 weeks.

Since human life begins at conception, i.e. fertilization, and since all human life should be equally protected by the law from conception to natural death, whether or not the human being concerned is wanted or handicapped, it follows that the destruction of unborn life is always wrong. Humanists regard abortion as better as bringing unwanted babies into the world. It is a mistake to say that humanists are in favour of abortion which accept in unforeseen circumstances, is the result of failed contraception. We think there will probably always be a certain number of unplanned pregnancies and that the mothers concerned should have the complete choice of either early abortion or keeping the baby.

If a doctor suspects the mother's life is in danger he will recommend an abortion.

Sometimes in the olden days it was baby to live or mother to live. Doctors then asked the father if he thinks doctors suspect that the pregnancy will cause the mother mental or physical disorder then they can have an abortion.

There is evidence to say that the child is abnormal or physically abnormal inside the mother's womb before it is even born by scanning.

Please don't rush this. Please think carefully before you put ticks anywhere. Please be as honest as possible.

Look at the list of research skills. Look at the headings of the three columns. Put ticks in the appropriate places.

	Already used it before the English project.	Used it for the first time while doing the English project.(OR used it properly....)	Used it while doing my RE essay.
List of key words.		✓	✓
Used the Subject Index.	✓		
Reference books	✓	✓	✓
Newspaper articles	✓		✓
Magazines	✓		✓
Local Societies			✓
Local Libraries	①	✓	✓
Television	✓		
Other people	①	✓	✓
Checked to see if sources were appropriate.		✓	✓
Skimmed and scanned.	✓		✓
Wrote notes in own words.	✓	①	✓
Reorganised the order of your notes.	✓	①	✓
Wrote an introduction.			✓
Wrote a conclusion.			

(Sir)

6.3.91.

I have no problems so far I have got the books that I need. But I have to make a choice to see what I am going to do, because there is too much to choose from.

7.3.91.

(Sir)

I have thought of a question like you said and it is in my log book. I am having no problems what so ever. I have got all the information that I need because I brought 5 of my books from home to school. I am also enjoying this research a lot.

Good. I look forward to reading the finished project.

Sources

School library

~~Public~~ Magazine.

People. I asked my dad for info.
my books at home.

About 82% of the information 1

Appendix F. Section Four.

Materials to help illustrate how diary entries, self-assessment responses and interview responses provided evidence that Rachel engaged in metacognition.

- (a) Sample of diary entries.
- (b) Self-assessment sheets.
- (c) Summary of the final interview.

Homeworks

Log Entry

28th Feb.

I found the work we did today easy. All you had to do was follow what was written on the card. When we were first told what to do I wasn't pleased. We are already doing our own projects in history. I wasn't really sure what to do for this project, I mean what subject to choose. Everyone else seemed to have really good ideas and I had nothing. Sometimes I find thinking of good and interesting ideas hard. But now, I think I have good idea even if it is a little complicated. ✓✓

Research

Galaxies

Suspended in space are collections of stars and planets. These are called galaxies a word which comes from the Greek word for milk. Most galaxies have one central star which the other planets revolve around. In our own galaxy Earth is one of nine. The Sun is the main planet. It is named the Solar System. The word Sol is Latin for Sun. The moon takes 27 days to circle the earth. It takes a year for the moon to circle the sun. Man first landed on the moon on 21 July 1969.

Log Entry

6th March

In this lesson I followed the next part of Step 3. I can tell this is going to be a complicated project because already I found so much to write about. At the moment I'm using just one book which I think is going to be a good help. I have found out quite a few facts that I didn't know already even though I've hardly started. This is going to be an interesting but complicated project ✓

Log Entry

7th March

In this lesson I had to go back and repeat half of step 3 that I had forgotten, to do before I could continue with my research. That was the only problem I encountered today but it did not take long to put right. I am now following Step 5. ✓

You have chosen an interesting subject. I look forward to reading your project.

Log Entry

18th March

Over the last few lessons I have continued with my research, I have found lots of books that help me and I have no problems.

Sources:

28th March

School library

Books at home.

Of the information I found about 80% of it was new to me.

Log Entry

7th April

I have used books from the public library to finish off my notes. Both of which are very helpful. I am getting really bored with this project and seem to be writing less and less about each planet. Anyway, I have nearly finished my notes.

Sources now:-

School library

Books from home

Public library

Key words:

Sun ✓ 523.7 Book:- The Inner Planets

Moon ✓ Book:- The Inner Planets

Stars ✓ 523.8 133.5 Book:- The earth in space

Venus ✓

Mars ✓ Book:- The Inner Planets

Mercury ✓ Book:- The Inner Planets

Saturn ✓

Jupiter ✓

Pluto ✓

Uranus ✓

Neptune ✓

Galaxies ✓ Book:- Stars and planets

meteors ✓ Book:- Stars and planets

Earth ✓

Comets ✓

Zodiac signs ✓ Book:- Stars and planets

The Universe

The Solar system

Atmosphere

Question:- How is earth different from Mars?

What have I achieved?

You should now have finished writing up your research. I hope you are pleased with the results. Now, put a tick in the appropriate column, to show how confident you feel about each Step of the research process. If you are not confident about any Step, write on a piece of file paper what you will need to do to become more confident.

	Very Confident	Confident	O.K.	Not Confident
Choosing a subject to research.			✓	
Making a list of key-words.			✓	
Using the Subject Index.		✓		
Using other sources: Reference books		✓		
Newspaper articles.		✓ NA		
Magazines.		✓ NA		
Local societies.			✓ NA	
Local libraries.	✓			
Television.		✓ NA		
Other people.			✓ NA	
Selecting suitable sources of information.		✓		
Skimming and scanning.	✓			
Writing notes.	✓	NA		
Organising your notes.		✓		
Writing an Introduction.			✓	
Writing a conclusion.			✓	
Writing your article.	✓			

Any other comments.

Please don't rush this. Please think carefully before you put ticks anywhere. Please be as honest as possible.

Look at the list of research skills. Look at the headings of the three columns. Put ticks in the appropriate places.

	Already used it before the English project.	Used it for the first time while doing the English project.(OR used it properly....)	Used it while doing my RE essay.
List of key words.		✓	✓
Used the Subject Index.	✓		✓
Reference books	✓		✓
Newspaper articles			
Magazines			
Local Societies			
Local Libraries	✓		✓
Television	✓		
Other people	✓		
Checked to see if sources were appropriate.	✓		✓
Skimmed and scanned.	✓		✓
Wrote notes in own words.	✓		✓
Reorganised the order of your notes.		✓	✓
Wrote an introduction.	✓		✓
Wrote a conclusion.	✓		

Summary of final interview with Rachel.

1. Did you find it easy working on your own like this?

A. Yes. I liked the cards. All you had to do was follow the instructions.

2. Did you have any problems deciding what key words to use?

A. No. I wanted to do about planets so I thought of all the planets I knew and used them.

3. Did this suggest any other key-words?

A. No. But I did find other information like on meteors, which I didn't plan.

4. So, did you think the idea of key-words was useful?

A. Yes (Pause) and no. It helped me find loads of books but I think too many. You didn't give us enough time to use them all.

5. You said in your diary that you became bored with the project.

A. Yes, I did. I liked the idea of the subject. But it was too big. (Pause) I wish I had got a better question to start with. One that wasn't so big. So I didn't find so many books.

6. Did you ever find a source, but then not use it because it wasn't appropriate?

A. Loads of times. I kept finding books because of my key words, but then books were sometimes too easy and sometimes too hard. I chose the ones that were best for people of my age. Because I was writing for people of my age.

7. So, when you wrote your essay, did you just copy up your notes or did you deliberately write it up in words suitable for people of your own age?

A. (Pause) I deliberately didn't use books that were too difficult. The ones I used I tried to write in my own words..... Did it work?

8. How did you decide on the order of your essay? Did you just copy out the notes in the order you made them?

A. No, I couldn't do that. Because I used so many books I found something on a planet, and then in the next book I found something else. So I had to collect everything I wanted together.

9. So, what helped you decide which planets to write about first?

A. I was going to just write about them. Then, I thought of alphabetical order. But in the end I did all the planets in how far they are away from the sun. Then I added all the odd bits like meteors at the end.

.....

Appendix F. Section Five.

Materials to help illustrate how Mandy learned library research skills, engaged in metacognition but failed to transfer her library research skills.

- (a) Sample of an essay, on the subject of the environment, produced during English lessons.
- (b) Sample of an essay, on the subject of abortion, produced during R.E. lessons.
- (c) Self-assessment sheets.

Introduction

I think the environment is a set of extremely important issues. The rainforests is the one which disturbs me most because man is killing so many animals by destroyed their natural habitat.

This project tries to explain that if everyone did their little bit then the whole world would soon be back to as normal as possible. It is also highlights the main problems and what is being done about them.

I hope this project helps you understand a little more about the problems the world has to face.

Conserving Rainforests

Rainforests are the richest and oldest habitat in which animals live. Even so, they are suffering from the worst and most rapid destruction, the influences of mankind. Every year 4-5 million hectares are completely destroyed, this is the equivalent of 12-20 hectares being destroyed every minute of every day.

Why are the rainforests vanishing at such a rapid rate?

The answer lies in the need of the people. They cut down the forests believing they will immediately gain extra money.

In tropical countries where rainforests occur, most of the population are involved in farming, the people cut them down to make room for their farms because more money can be made in farming than from the rainforests.

The rainforests are also destroyed because of the demand for mahogany and wood like teak in the western world the wood is used for furniture.

Today, we have technology which allows us to cut down the forests much more quickly. This helps the people that live in the rainforests to make way for roads, dams, canals and power lines.

The Consequences of deforestation

Mostly, the rainforests are cut down to make way for necessary expansion. Sometimes though, when an area of forest is cleared it is found not to be suitable for its new purpose.

Rainforest soil is very old so it doesn't have many nutrients. This means crops can't be grown there.

Removing the forest cover can produce side effects too. Rainforests are responsible for the local rainfall so if you cut down the trees it would reduce the rainfall. Eventually, if all the trees were cut down the region would turn into a desert, it would also make the rivers prone to flooding. In India, there are floodings every year because of the deforestation in the Himalayas.

Even if you don't live anywhere near a rainforest the deforestation can effect you because the rainforests regulate the global weather pattern. In tropical regions over a billion people depend on the rain to irrigate their crops. In the northern hemisphere the destruction of rainforests contributed to the build-up of carbon dioxide and the destruction of rainfall cycles. Eventually, it could lead to the total warming of the whole planet. This is called "The Greenhouse Effect".

How can we stop destruction ?

Most rainforests are found in developing countries. It is very easy for developed countries to criticize them for destroyed their environment. However, to make their countries better, developed countries have already destroyed some of their natural environment. Even now they still unnecessarily pollute their atmosphere.

The western world must help the developing countries to try and conserve the rainforests before it's too late. The western world can offer lots of

help because they are so far advanced.

Can we stop the destruction?

This is a very difficult question but there are ways in which the cutting down of trees could be brought under control. If current ways of farming were changed, this would reduce the need for land, and therefore, reduce the rate of which the forests are cut down.

Recently, scientists have begun to study the forest canopy, using aerial walkways. This is good, but this will not help save the forests. Lots of conservation organisations have sent money and experts to support bigger groups.

What have I achieved?

You should now have finished writing up your research. I hope you are pleased with the results. Now, put a tick in the appropriate column, to show how confident you feel about each Step of the research process. If you are not confident about any Step, write on a piece of file paper what you will need to do to become more confident.

	Very Confident	Confident	O.K.	Not Confident
Choosing a subject to research.	✓			
Making a list of key-words.		✓		
Using the Subject Index.		✓		
Using other sources: Reference books		✓		
Newspaper articles.			✓	
Magazines.		✓		
Local societies.			NA	
Local libraries.		✓		
Television.		✓		
Other people.		NA		
Selecting suitable sources of information.		✓		
Skimming and scanning.		✓		
Writing notes.		✓		
Organising your notes.		✓		
Writing an Introduction.		✓		
Writing a conclusion.		✓		
Writing your article.		✓		

Any other comments.

I tried my best on this project because I am interested in the subject I think it is important to be interested in the subject you are

Letter to the pregnant girl's friend :-

Dear Jane,

I have thought very carefully about the reply to your letter. I think your friend has three options :-

- 1) That she keeps her baby. This would be very difficult as she would have to give up school, college or work. (whichever she attends) She would struggle to support herself and the baby because she would probably have next to no income. It would be very hard for your friend to look after her child because he or she is physically handicapped. (I can say that the baby is physically handicapped because at your friend was only 14 weeks pregnant when she had the tests done it would be too early to do Amniocentesis tests to see if the child was mentally handicapped.) Looking after someone single-handedly at her age with this condition would put a great strain on your friend mentally and physically.

As a Christian I don't think I could justify a 17 year old supporting a physically handicapped child as I don't think she would be able to cope.

- 2) That she goes through with the pregnancy but gives the child up for fostering or adoption. I think this would be a better idea. Even so, she would have to go through with the pregnancy. Your friend is very young and a pregnancy at this age could lead to all sorts of complications. However, by giving the child up for adoption or fostering, at least your friend

could know that her baby went to a loving home and be well looked after and getting the right treatment. There is one disadvantage with adoption. As soon as the baby is born the mother and child begin to make a bond, when it becomes time to give the baby up the mother can go into depression which could last a long time.

As a christian, this option could be more justifiable than the first option. The child could have a chance to live a life with a family who could support him or her, make sure the child would be properly looked after and great the right treatment.

3) Have the baby aborted. This option could mean your friend could carry on with her career or exams. It could mean she wouldn't have to go through with the pregnancy which means there wouldn't be any complications. If the baby was aborted it could mean that he or she would have no chance to live.

As a christian, normally I would disagree with this but because the child is physically handicapped and he or she wouldn't have much quality of life, in this situation, I could justify abortion. Legally, your friend would be able to do this because the child is severely physically handicapped.

I have set out your friends choices as I see them. In your letter to me you said your friend wanted an abortion. If she decides to go through with it you must stick with her and help her because it would a very traumatic time for her and she would need friends to help her through.

If your friend needs professional help then she should talk to her GP and he or she will give her some information to help her.

Yours hopefully

Agony Aunt Cosmopolitan magazine.

As part of the RE essay you have been doing, you have had to research into the subject.

While you were looking up information, did you think back to the research work you did in English? ~~Yes~~ / NO.

Whether you answered yes or no to the question, put a tick against any of the following things you did when you looked up information.

Made a list of key words. ✓

Used the Subject Index.

Used: Reference books ✓
Newspaper articles. ✓
Magazines. ✓
Local societies. x
Local libraries. x
Television. ✓
Other people. ✓

Checked whether sources you found were suitable. ✓

Skipped and scanned sources. x

Wrote notes. ✓

Reorganised your notes into an order which was helpful for your essay. x

Wrote an introduction. ✓

Wrote a conclusion. ✓

It was hoped that you would use some of the skills you used when you did your project in English. Can you explain briefly whether the project you did in English effected, in any way, the research you did for this essay.

I didn't use many of the skills I learnt in English because I wrote alot of my notes from the videos we watched in class. Even so I did look through books and magazines and I found a interview which I wrote about. The English work didn't help me much this time because alot of my notes were gained from videos and I didn't use many books. Is we didn't gain alot of

Thank you very much for your help.

Information from videos I could have used the method we used in English.

Please don't rush this. Please think carefully before you put ticks anywhere. Please be as honest as possible.

Look at the list of research skills. Look at the headings of the three columns. Put ticks in the appropriate places.

	Already used it before the English project.	Used it for the first time while doing the English project.(OR used it properly....)	Used it while doing my RE essay.
List of key words.		✓	
Used the Subject Index.		✓	
Reference books	✓		
Newspaper articles	✓		✓
Magazines			
Local Societies			
Local Libraries	✓		✓
Television	✓		✓
Other people	✓		
Checked to see if sources were appropriate.	✓		✓
Skimmed and scanned.		✓	
Wrote notes in own words.	✓		✓
Reorganised the order of your notes.	✓	✓	✓
Wrote an introduction.	✓		✓
Wrote a conclusion.	✓		✓

Appendix F. Section Six.

Materials to help illustrate (i) how colleague observers, photographs and research diary entries can be used for triangulation, and (ii) how research diary entries can aid reflection.

- (a) Notes made by colleague observers.
- (b) Photographs taken by Year 11 pupil.
- (c) Two samples of research diary entries.

24.04.91.

Library Research Skills.

I am trying to show that the Supported Self Study pack which you have used with at least one class allows pupils to "reflect" on the skills or even to "evaluate" the skills. That is, I hope that the SSS pack helps pupils to think about what they are learning, and help them later to reflect on its value in different circumstances. Do you have any thoughts on this? It may be actual evidence, speculation, or even anecdote. I would be very grateful for any help that you can give me.

ORGANISATIONAL SKILLS:

Very impression good use of time and resources —

RESEARCH METHODOLOGIES:

Obviously very library based — tended towards the literary rather than the scientific . . . but then again was the research a collection of information or an interpretation.

Focus ON Task:

Good understanding of process very little 'clabraging' behaviours . . . only Tony L. (where was he . . . using a computer to no avail in STAS) and Lee A. seemed to require to be kept on TASK ORIENTATION (worth an E that phrase)
 O Neave. O Neave seemed to ① know what they were doing
 ② enjoying it . . .

QUALITY OF RESEARCH:

Tended more to 'cude' copy extraction from a minimum number of research sources (probably fault of range in the library).

'Brighter' pupils produce 'good' extensions . . . others . . . somewhat mediocre . . .





Library Research Skills.

I am trying to show that the Supported Self Study pack which you have used with at least one class allows pupils to "reflect" on the skills or even to "evaluate" the skills. That is, I hope that the SSS pack helps pupils to think about what they are learning, and help them later to reflect on its value in different circumstances. Do you have any thoughts on this? It may be actual evidence, speculation, or even anecdote. I would be very grateful for any help that you can give me.

This was used with two classes who responded in different ways. The steps taken were clearly introduced but the less able found it difficult to 'wean' themselves from copying chunks out of text books. ~~This was~~ with the 3rd year class the pack was 'too late' they had already got into 'bad habits' & it was difficult to keep tabs on each process undertaken. The second year class was more successful. They produced some interesting, original work and learnt the value of planning & structure. I feel that this pack should be done in the first year & constantly referred to in years 8-10 (making more specific demands as the kids progress). Kids actually said the pack helped them but I noticed the 3rd years were doing a science project at the same time & they were expected to copy chunks out etc. which made my job difficult when I discussed structure, skimming etc. They found the transference of skills from English to science quite difficult.

The results were illuminating. I think the exercise showed far more clearly what a good piece of research should be like. Interestingly, the people who are having difficulty reading, and producing an interesting subject for their own research, also found this exercise difficult. I had to work quite closely with these groups, considering the strengths and weaknesses of the topics they were assessing. I have kept the written assessments.

March 1st. (Double lesson: my birthday.)

I have finally come to two conclusions. ONE, it is very difficult to observe pupils at work. I don't want to interrupt them and ask them what they are doing as it may make them self-conscious. I hope that their diaries, completed books and interviews will provide me with the missing answers. It would be impractical to use schedules as I am frequently helping individuals. I don't actually think a schedule completed by someone else would be any good either as I don't think I am interested in the type of behaviour that would be so easily observed. The number of books a pupil reads is not as important as the way the pupil uses the books. However, an observer may confirm things like my feeling that all the pupils are working hard. I must ask someone to come and observe. TWO, the idea of pupils generating interesting subjects is a little optimistic at this age. I am still finding pupils who have either not worded interesting questions, or who have by-passed them by reverting back to the copy-a-book style of writing. It may well be that I will find something out about the different people who have coped with the task. However it may be as simple as the people who manage to choose an interesting subject have an interest in an issue rather than a subject. I think that it may have been better if I had had a series of questions that people could choose from.

A careful look later at their diaries and research books will tell me who has had difficulty wording a topic. (Mind you, it took me nearly a year to word this research project, with a great deal of "assistance" from Dennis. What chance have they got?)

Anyway: there were a number of people using Crack the Code to find books. They are very confident about that, but I need to find out what they do if the key-word they want is not there.

I have been pleased that two groups have asked the librarian for help. One group has got the newspaper cuttings available on their subject, but it has not tempted any others to ask.

A number of pupils are getting books off the shelves and browsing. I witnessed two people actually skimming through a book then discarding it. I have found absolutely no examples of copying from books. I will need to see if an analysis is possible of the pupils' books and their bibliographies to see how they have used the reference books. It may be possible to see how successful they have been in synthesising their reading.

March 5th (A single today)

I started off by asking who had done their homework and found some information for their book outside school. Only five people had. The others had not even given it a thought. I suspect that research outside school means seeing if they've got a book about it at home.

In the library there was a buzz of activity. One girl hadn't realised that the library kept daily papers! Someone else finally came up with an interesting subject, "Do we need nuclear weapons?". He's used an encyclopedia today, and discovered the newspaper cuttings. I watched two boys make intelligent notes from a book (much better than the Yr. 11 pupil next to him!). I think that every one now has a reasonably interesting subject. My next task is to help them realise that even in school there are other sources than books. (Teachers, videos, leaflets.) Remember to get the Social Studies list of videos.

I must get them to spend some time tomorrow filling in their diaries.

March 12th.

At the beginning of the lesson it seemed that everyone was working hard, although it was difficult to understand why one of the girls was looking through the fiction section to find books about "Cruelty to Animals". After five minutes only four people were not working at a desk. 15 people had gone straight to sources that they had identified earlier. There is a reluctance to take books out of the library: because they are bulky and need carrying around? because the pupils will not be working from them outside of the classroom? because they are not used to having books out of the library?

Jason and Gary were wandering aimlessly around the library as though it were an unfamiliar bookshop. They didn't know what step to take next. After a little talk it was agreed that they had a topic decided but they didn't understand how to collect books on the relevant areas. I suggested to Jason that he got a book about physical fitness but five minutes later I had to get the book for him as he had no idea, or drive, how to find one. I had to give a remedial lesson on how to find books.

The group doing cruelty to animals were delegating areas of responsibility today so that all the sources they required were collected quickly. They then sat down and shared everything.

One of their group asked for some plain paper and an envelope in order to write to the RSPCA.

Shane still hasn't decided on a topic yet. (He has missed lessons though).

I directed one girl to the encyclopedias. She was astounded to discover that there was more than one set. I showed her how the index worked.

Darren, working on a topic "The production of Plays" was busily copying out from an encyclopedia an article about Italian Theatre.

PROBLEM. Do I solve everyone's problems for them so that they are better prepared to use the library, or because this is a piece of research do I want to observe their mistakes so that I can prepare strategies to avoid them with future groups? Or is the answer a compromise? I suspect that I need two people in the library if I am to both find the information the

but in fact I am not entirely sure.

April 14th.

After visiting Dennis I am now at the stage where I will have to start thinking again. I am still pleased with his idea of the algorithm to define all the possibilities. I would never in a month of Sundays come up with such a tidy way of analysing everything. However, I am now in a quandry. I thought that I had found evidence of pupils in four of the five categories but not in the other two. Dennis has now challenged the association between metacog. and trans. He agrees that there is an association but has asked me to go back through all my data to (a) look for other conditions. he thinks that I have been clouded and have bbe looking only for metacognition governing transfer. (b) to give more thought to condition 3. He thinks that I have not considered the possibility of pupils transferring skills without engaging in metacognition.

NB. Dennis wants me to work faster or I am not going to meet the original deadline.

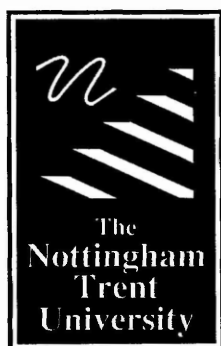
Remember to order the Elliott book and the Hopkins book that Dennis recommended.

April 28th.

Good ol' Dennis! Two weeks ago I was at a level of frustration that I could not imagine. Not only did I think that Dennis was being awkward, I didn't really understand what he was going on about. Today I have had a breakthrough.

(a) First of all, I have had other conditions affecting transfer in front of my very eyes. Dennis was right. I had been blinded because of the emphasis placed on metacog. in the research lit. Perhaps all the researchers have been blinded in the same way. It has been quite clear! that motivation is obviously an influence. One of the main reasons why Mandy didn't transfer was recorded in her SA response when she said that she wasn't interested in the subject of abortion. I looked back to interview data and she actually said that she had thought about library research skills but had chosen not to use them. I wonder what other conditions may emerge with more careful consideration of the data.

(b) Secondly, I was really chuffed with this one. I looked back through all the stuff and one of the girls needs to be redefined. I have been looking for the link between metacognition and transfer and something escaped me. If I devide the technical skills of library research from the cognitive aspects then it is possible to see that she had transferred her ability to use sources and integrate information without actually looking for more information. She hadn't transferred information retrieval skills but had transferred her ability to use information effectively. As she denied ever thinking about lrs while doing her RE essay there seems to be evidence of transfer without metacog. That is, metacog. helps transfer, but in fact is not a prerequisite. This means that I am going to have to go through all og chapter 5 again so that I can be less sure about the role of metacog. and



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