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INFORMATION LITERACY AND THE SECONDARY SCHOOL

By

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Abstract

Maximising student attainment is a key issue for every secondary school. Student attainment can be improved by raising their information literacy levels. It is part of a school librarian's role to promote these skills. This is complicated by the absence of information literacy in secondary school curricula, teachers' low awareness of the concept and the lack of teacher training in the professional education of librarians. There are a range of definitions and different approaches to teaching information literacy published leading to conflict over choices. Overall there is a lack of empirically tested pedagogy, particularly for synthesis and assessment. This research explores what it means to be information literate and addresses the fundamental question of 'How can we raise information literacy levels in a secondary school?'

The research strategy explored the teachers' perspectives to ascertain their perceptions of information literacy, how it is currently taught by them and their understanding of the librarian's role. The research was conducted in a secondary school where semi-structured interviews were used with a sample of twelve teachers selected by age, experience and subject. The analysis examined three diverse teacher voices and compared these with insights from the remaining nine teachers' perspectives.

The research findings show that teachers view information literacy differently. This is shaped by the role of information in their subject's approach to learning. Student progress to higher information literacy levels requires a pedagogy that is situated in subject teaching, rather than generic sessions, with clarity of how skills are deployed in different subject contexts to support learning transfer and work that is differentiated to meet different learning needs.

Conceptually it was found that information literacy is contingent upon the context in which it is being used. A new instrument has been designed depicting progress in information literacy to stimulate thinking about possible pedagogy and assessment.

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1 Chapter One

1.1 How can we raise information literacy levels in a secondary school?

The core business of those working in schools is to improve teaching and learning, thereby raise student attainment and provide young people with better life chances. School librarians see information literacy as an important ingredient in this process. Neither libraries nor information literacy are statutory parts of school life and so librarians have a mixed experience of developing this work. A school is made up of its subject departments, its individual teachers and each have their own teaching styles and beliefs about what works in their classroom with their students. So by researching information literacy from the teacher's perspective this research will explore and define what it means to be information literate in a secondary school context.

1.1.1 Introduction

I have chosen information literacy as the focus for my research because developing this aspect of curricula and teaching practice is part of my remit as a school librarian. The choice is also driven by my code of ethics which are concerned with the provision of information and people's access to it. In a school context I see my role as empowering others to access and use information in all its forms. By improving information literacy teaching and learning I will contribute to raising student attainment across the curriculum. As a school-based practitioner I am concerned to identify what works effectively in the secondary school setting. If more can be found out about the teaching of information literacy from the teachers' perspectives it may cast light upon the roles a librarian can play in making this work more effective. At the present time there are a number of approaches for the teaching of information literacy and each presents the librarian with different roles to fulfil and problems to negotiate. The following section is going to look at these roles, their strategies and the problematic aspects that inhibit development which culminate in the need to perform this research.

1.1.2 Approaches to teaching information literacy

One of the earliest and most influential definitions for information literacy was laid out in Michael Marland's nine questions for handling information in 1981:

'What do I need to do?	Formulate and analyse need
Where could I go?	Identify and appraise likely information sources
How do I get the information?	Locate individual resources
Which resources should I use?	Examine, select and reject individual resources
How shall I use the resources?	Interrogate resources

What should I make a record of?	Record and store information
Have I got the information I need?	Interpret, analyse, synthesize and evaluate information
How should I present it?	Shape, present and communicate information
What have I achieved?	Evaluate the assignment'

(Marland 1981 p.50)

As a model created by a Head Teacher, rather than a librarian, and placed in a book for teachers to develop their teaching, it became very influential in the school library world. Librarians were able to use it, despite later criticism of its simplistic nature (Tabberer 1987), as a basis for developing work with teachers for use of the library by students. Marland's approach (Marland 1981) was underpinned by a view that students needed to be encouraged to consciously reflect on their work and processes which resonated with a relatively new theory at that time of metacognition (Flavell 1979). Metacognitive knowledge can lead to selection, evaluation, revision or deletion of cognitive tasks, goals, and strategies. One may argue that metacognitive knowledge is no different from other kinds of stored knowledge, yet in a learning context, when a student becomes aware of their own skill development they can take more control of how they choose to work and consciously apply this knowledge in different situations. Metacognition is currently being promoted through personalized learning as a driver for school improvement (Hopkins 2007).

There are several strategies for the implementation of information literacy teaching: the stand-alone approach, the across-the-curriculum method and the embedded-in-the-curriculum programme. The 'stand-alone' approach treats information literacy as a separate curriculum and is taught to students outside of a subject context and depends upon curriculum time being given by a subject teacher to the librarian for that purpose. This may take the form of an induction for new students to the school so that they know how to find things in the library for when a teacher sets research homework. In the absence of curriculum time being given, librarians rely on displays and website guidance, to remind students of the steps they should follow in order to be information literate. The difficulty of the stand-alone approach is that it lacks relevance in the students' eyes which means the knowledge is rarely retained. Its strength is that for many school students it gives them the confidence to walk back through the door of the library by themselves in order to use the service.

The 'across-the-curriculum' strategy involves time from more than one subject for the teaching of information literacy skills in the library. The skills for using a variety of information resources maybe taught generically or linked into the subject whose time has been given. Sometimes a teacher has identified a suitable research task as part of a unit of work to give the students experience of the library and of research. Rarely are the information literacy aspects

made explicit in the assessment and often the librarian may not see the final outcomes produced by the students. It is a serious weakness of this approach that the assessment of information literacy skills is considered implicit in the assessment of the student's subject knowledge. This means that they lack profile in the eyes of the students and the learning of these skills will not be given the same importance as the subject knowledge itself. If there is less awareness of them and less value attached, then they are less likely to be transferred by the student, to other contexts. If information literacy skills were explicit, the teacher could actively monitor and track their development, promoting stronger understanding of them by students. If the librarian was more involved in assessment of the outcomes of work they would be able to evaluate and improve their own role within the process.

There is the 'embedded-in-the-curriculum' strategy where the librarian and teacher have identified information literacy skills relevant to that subject and agreed that improvement of them will raise student attainment. This means both teacher and librarian are working to common goals and this is more likely to make the experience effective for students. An additional strength of this approach is that the library experience will be written into the scheme of work, thus spreading the programme systematically across the subject department ensuring some consistency of the offer for all students.

In practice, not all teachers follow a scheme of work in the same way, which weakens the notion of a systematic offer available to all students. Teachers judge the time needed by a class to complete the units in a scheme of work and if necessary leave out activities or reduce them in order to meet deadlines. In this approach the library-based experience can be deleted by the teacher when planning, depending upon time available and sometimes on the quality of the relationship between librarian and teachers. This approach can be seriously weakened by the individual teacher's perception of the importance of information literacy in comparison with the need to spend time on subject content.

Another weakness, in common with the 'across-the-curriculum' model is the balance between product and process. Specifically meaning how much time is spent on subject knowledge at the expense of time spent focussed on skills. It is easy for the skills to become buried beneath the teaching of subject content. This will mean that they are not made sufficiently explicit and students will not be given appropriate time to examine and practice them. Without this kind of experience students do not move to greater independence in the finding and using of information, but remain reliant on the teacher as the source of all information. Another barrier to maintaining the offer rests on the ephemeral nature of schemes of work. These are regularly re-written when departments change exam boards or new curricula is produced. The Science Department in my own school has re-written its scheme of work four times in the last ten years.

Therefore relying on a scheme of work that is constantly in transition, to establish information literacy teaching, is a little like walking on quicksand. New priorities can lead to the previous information literacy content and activities being over-looked in the new scheme of work. When information literacy skills are not addressed before students reach Advanced Level studies, many remain unprepared to cope, with the study skill demands of the sixth form experience. Without extra support they can struggle to make this transition.

Most importantly, all of these strategies for implementation are susceptible to staff turnover. As teachers leave and arrive the profile for information literacy in a department's teaching practice changes. So much depends upon its roots, how it comes into being within a department can determine how it is valued by the team and therefore, how long teaching of it will be sustained. How the teacher values information literacy can also be influenced by their past relationships with libraries and the level of their own research skills. This research aims to discover if teachers in different subjects have distinctively separate information literacy priorities as this would be a strong influence on how they engage with it. If a teacher perceives a gap in student knowledge and sees that the answer lies in how well they research, they may either develop an activity to resolve this or approach the school librarian to provide a solution. This choice may well be influenced by their past contacts with libraries and how they view the librarian's role, but will also be determined by their preferred style of instruction and the school's culture (Streatfield and Markless 1994). If the motivation and energy to establish explicit information literacy teaching all comes from the librarian's side then there will be little ownership or understanding of it held by the teacher. The different degrees of ownership and understanding of information literacy teaching can affect the strengths and weaknesses of its practice.

1.1.3 My view of information literacy

Each subject has its own literature, style of writing, technical language which forms its literacy and teaching these so that a student can identify, read for meaning and produce their own work is essential. A healthy reading culture is one which fosters thinking about reading where what is read is discussed and questioned. Reading for meaning, reading to detect assumptions and biases, to determine how a writer has achieved that effect are all aspects of reading, in my view, which form the building blocks of information literacy. Developing readers and this culture is a major strand in the work of any school library. My role in this school is to co-teach with the English Department reading lessons for all Year 7 and Year 8 students to develop their confidence as readers and create a positive reading culture throughout the school. Developing reading skills is the foundation stone upon which access to all other academic learning rests.

I have worked with many strategies and techniques for information literacy work and experienced most of the weaknesses so far mentioned. There have been degrees of success,

realisations of ineffectiveness and erosion of much hard work at different times. Always one aspires to learn more to improve the teaching of information literacy. As a professional one can draw upon the literature of the field, both of librarianship and of education, attend training courses, study the practice in other schools and discuss the issues with teaching colleagues in school and library colleagues outside school. Therefore another reason for this chosen research area is to look more formally at the literature. There are many conflicting definitions and a great deal of theoretical material produced by academic researchers and descriptions of projects by practitioners. I would like to make sense of it, to achieve perspective and understanding and perhaps find some answers to feed into my practice.

Despite my experience of working with different strategies for teaching information literacy resulting in mixed outcomes, I still believe in the importance of it because where work has been successful, it makes a difference to student attainment and their understanding of how to be a more effective learner. In the last 5 to 6 years I have focussed my energies on developing an approach that does not conform to any of the models so far described. A great deal of my learning about what makes teaching information literacy successful in my school is based on work with Key Stage 5 students and teachers for A level subjects. The work at Key Stage 5 has been studied formally for doctoral research purposes. This work has been characterised by taking a student and task-centred approach to the teaching of information literacy as opposed to beginning with a generic list of skills or set of resources that must be taught to the student. In this way we have endeavoured to give students access to a range of choices in the way they can work at different stages in a task. The ability and the understanding of the student have been the main focus in relation to the priorities that the task demands of them.

A concept that was very influential in developing this approach is found in the research of Ross Todd (2001). He described school libraries as 'not an information place, but a knowledge-making space' where students could be supported to reflect and create new understandings of knowledge for themselves. This helped crystallise notions about the educational role of a school library and how it could assist students in their personal transformation. Knowledge-making was no longer solely identified with the classroom and the library was acknowledged as a vital learning environment for school students. For some librarians it moved thinking about information literacy teaching away from a focus on information resources and how to use them, to an emphasis on the library user and their development (Todd, Gordon and Lu 2011).

At the same time to underpin this I have tailored my style of input to meet what has been required by an individual teacher or department in order to build relationships between subject departments and the library. I see these activities as a way of modelling for the teacher the skill or knowledge that they feel students lack, in order to empower their future teaching practice.

For instance, when a Design and Technology teacher wanted their students to be shown how to gather a better range of design inspirations so that they could be more original in their work, I modelled a search strategy for students that examined originality in design, in effect empowering the teacher at the same time. As a result the teacher felt greater confidence in continuing this work in his own classroom and a grassroots idea has developed that the library is a source of support and learning for both students and teachers. So if we return to Marland's information literacy model (Marland 1981) it can be seen that the actions of questions 2 to 5 are clearly established as librarian roles.

Over the last three years I have given presentations on staff INSET days to share the Key Stage 5 information literacy work, to open up questions about student skills and to offer support and ideas (Appendix One). Strategically this has established my role as a leader of learning in the school, culminating in becoming one of the Teacher Learning Community Leaders. In the spring of 2011, I gave a presentation at a Middle Leaders and Senior Leadership Team meeting to provide an insight into the student experience of skills teaching based upon the research done at KS5 (Appendix Two). These endeavours have been aimed at moving thinking about information literacy and the library's role, from not only covering questions 2 to 5 in Marland's model (Marland 1981) but to encompass the synthesis and writing skills required for questions 7 and 8. This led to five subjects volunteering to co-develop work with the library and to a request from the Leadership Team to develop a KS3 programme.

As mentioned the work at Key Stage 5 had made a deep impact on my view of information literacy and its teaching. This research at Key Stage 5 which took place earlier in this Doctoral process, was small in scale, focussing on students who had worked in library sessions as part of their A Level RE course. During these sessions I modelled how to interpret an exam paper question, research for relevant material, organise the findings and synthesize them in response to the question. The process was supported by the teacher who as the subject and exam expert is called on to make those finer judgements about relevance and quality of outcomes. Writing is modelled by both staff working together to create and re-draft text simultaneously in front of the students. Subsequent sessions move from staff modelling to supporting student practice and to co-creating with students.

The themes that emerged from this Key Stage 5 research have strongly influenced my practice and beliefs regarding information literacy. Themes of impact, metacognition, skill transfer, independent learning and different ways of learning emerged from the interview data (Appendix Three). Statements that identified a direct form of learning gained by the students from the session were categorised as 'Impact'. Some statements revealed evidence of the student using the newly learned skill in another subject area and these were labelled 'Transfer' statements.

This notion of transfer is particularly important as it forms evidence of successful skills teaching in helping students to develop independent practice outside of the session. Where statements described a style of learning experienced in the session these were put in the category 'Ways of learning' in order to acknowledge the students' recognition of them. Personal statements that revealed a reflection on their own style of learning and how it has or has not changed were grouped under 'Metacognition'. Statements in the 'Independent learning' category represent student actions taken to support their own learning.

These student statements were compared with Bloom's Taxonomy of Educational Objectives (Bloom and Krathwohl 1956) and it was concluded that students had experienced the entire range of levels from one to six in all three domains: knowledge, affective and psychomotor. Knowing how to learn, being able to adopt new strategies and have a self-awareness that enables progress to be self-evaluated, marks out the successful learner from the beginner. It can be argued that awareness alone does not mean the learner will be able to act upon the knowledge, and in some cases it may impede progress, but it does begin to provide them with the language to question and reflect. This is the cognitive concept known as metacognition, sometimes referred to as thinking about thinking. It requires more than internal reflection but explicit modelling of a teacher or a librarian's internal reflections so that choices and considerations are thought out loud. Discussion of method and choices of how to tackle the task are essential to make the skills visible to the learner. The librarian or teacher provides the expert model and the students are apprentices who test different methods and reflect on what works for them. Learning experiences that are constructed to support students in developing this awareness empower the student towards greater autonomy as a learner. I believe this is an essential part of teaching the skills of information literacy, without metacognitive awareness, a learner will not identify what works for them and transfer it to other contexts.

This description of work with Key Stage 5 students to identify an effective pedagogy for teaching information literacy belies the complexity of the experience, the amount of learning that took place at the different stages for the staff involved and the length of time over which this took place. The search for effective pedagogy encompassed work with several cohorts and the differences found in each experience led us to the conclusion that differentiation is vital as no one strategy or method suits all students. Indeed students need to experience how to learn using different strategies depending upon the context they find themselves in. This next layer of research will enable me to move from this student perspective of the experience to that of the teacher.

1.1.4 School Context

This research is set in an inner-city, local authority controlled comprehensive school, with boys from 11-16 and a co-educational sixth form. It is situated in South-East London. The data collection took place in 2010 and 2011. There are currently 1445 students on roll in Years 7 to 13, with 248 of these in the sixth form. 38% of the total student population are identified as having special educational needs and 19% of students are registered for free school meals, both of which are significantly higher than the national average. 15% of students do not have English as a first language. Over 60% of students come from ethnically diverse origins with students of Black Caribbean heritage making up a fifth of the school's population. Exam attainment has continued in an upward trend over the last 15 years, starting from 14% at that time to reach the current 63%. A recent OFSTED inspection made it clear that a finding of 'Outstanding' depended upon attainment breaking through the 70% barrier.

In each Year 7 class a third of students will be flagged up with special educational needs (SEN) needs or listed as vulnerable young people who will be enrolled in our Learning Mentor programme to support their transition from primary to secondary school. All Year 7 and Year 8 students have a reading lesson in the Library each week as part of their English curriculum. Progress is assessed termly by librarian and teacher and this is reported to parents through the Learning Skills profile for each student. In addition to this theme of developing readers the other strand of any educational library is the development of information literacy in its community. As described earlier in its history this library has worked with a range of methods for doing this with a mixed set of outcomes. This history means that information literacy has featured in different subject schemes of work over that time, library annual reports and in more recent times in the minutes of Middle Leader meetings. As a result of leading whole-school INSET there are presentations available in the staff online shared area which can be accessed at any time.

Research for higher education qualifications is encouraged by the school leadership team. The current Head Teacher has been in place for four years and is someone whose previous responsibility as Deputy Head Teacher for Curriculum planning means he has a long-term knowledge of the library's work in different subject areas. The Senior Deputy Head Teacher is the line manager for the library and has been for many years and is someone who has facilitated the role played by the school librarian. The other Deputy Head Teacher as a former Head of English is very supportive of the library's activities. There are three Assistant Deputy Head Teachers and one of these was previously the Head of Science when the library was delivering a Key Stage 3 information literacy skills strategy embedded in their scheme of work. This Assistant Deputy is now the lead figure for staff In-Service Training (INSET) and has not only

welcomed input from the librarian in recent years but appointed the librarian as one of the leaders for the Teaching and Learning Communities. There is an awareness of and support for this doctoral study.

In Appendix Five there is an analysis of who has worked with the librarian on information literacy projects and it provides an insight into the kinds of work the librarian does with different departments. So even where information literacy is rated as a weak link there may still be a rating of strong for collaboration identified because the teacher and I may run a club activity together each week. This snapshot provided of relationships with teachers shows a staff of which the majority have some kind of direct working relationship with the librarian. This means the research is taking place in a sympathetic and supportive atmosphere.

1.1.5 The aim of this research

This research will centre on another stage in the process of developing information literacy teaching in this school, a goal that I seek in the belief that it will make a difference to our students' performance, not only in their exam results but in all of their future learning. To identify effective pedagogy for information literacy teaching and develop these changes in the school takes more than one person, it takes a whole staff team. The aim of this research will be to look at information literacy through the teachers' eyes bringing their unique subject perspectives and range of experiences to the fore. If the outcomes of this research can provide clarity of the teacher's viewpoint then a binocular form of vision may be achieved for school librarians. If we can see the world through the teacher's eyes we will be able to begin identifying which parts of our role are relevant and which parts need to be developed in order to advance information literacy teaching in a school. This research will identify what teachers of different subjects in this school identify as practice for information literacy. Clearly it is not possible for one librarian to be solely responsible for the teaching of information literacy to all the students in a school, so finding ways to engage more effectively with a wide range of teachers is crucial and for this we need a greater understanding of their perspective.

As a participant within this setting, issues of insider research are relevant and these will be examined more closely in the research methodology of Chapter Three. This research is the outcome of many layers of work, study and practical experience through action research projects and written from a school librarian's perspective, it may make a unique contribution to the literature at this level. Chapter three will examine the layers of this practitioner research process. One of the research themes is collaboration between professionals in this workplace and ultimately I hope to identify ways in which librarians and teachers can work together to raise information literacy levels. To facilitate this research semi-structured interviews with teachers form the main data collection tool. Before identifying a group of teachers to approach

for interview I performed a personal analysis (See Appendix Five) to identify who has experience of working with me on information literacy and those whose contact with me is more limited. This created a useful picture of staff with whom the librarian collaborates on different aspects of school life. Potentially it also serves as another way for a librarian to illustrate the integration of the library service for evaluation purposes. I used this analysis to begin my thinking about the sample selection process. This will be discussed in more detail in Chapter Three.

1.1.6 Research Question

This research question ‘How can we raise information literacy levels in a secondary school?’ appears deceptively straightforward but as one begins its study, layers of complexity are revealed. Information literacy does not have one straightforward definition and has since its inception been continually examined and re-articulated by those in a number of fields: librarianship, computer studies and education. One of the main themes in this thesis is the conceptualisation of the term information literacy, not only in wider society under the influence of the new technological age but also specifically within the community of a school. This research looks at how this has changed over time through the literature study and how it is understood by teachers in this setting.

As the concept of information literacy has been articulated at international and national levels and within different sectors of librarianship and fields of education, it has taken on a whole variety of dimensions. These dimensions reflect the writers and the context in which they apply the concept. In studying the literature and attempting to evolve a clear view of this landscape I believe the dimensions can be divided into two fundamental areas: those that surround a focus on the information source and those that focus on the information user. On the whole, when the focus is the information source the skills teaching is generic in nature and can appear in a linear format with an approach based on the attributes required to successfully interact with the source. The focus of the outcome is on a set of required behaviours. Whereas an approach that begins with the information user situates the skills teaching in a subject context and focusses on the task and improving the understanding of the student. This teaching approach is usually collaborative in nature with an outcome focussed on the learner’s understandings of the experience.

The role of librarian is much more easily associated with the choosing and using of information resources rather than with the creative process that follows. Yet in a school context it is those latter steps which are of primary concern to the teacher, they are assessed and illustrate the student’s attainment. If a school librarian can make the link between what they do and student attainment more visible their role is more likely to be valued by others. Introducing information

literacy teaching and a teaching role for the librarian depends upon a range of factors which necessitate a closer look at management of change theory. For a librarian to become more closely associated with the creative process of information literacy requires them to have a better knowledge of pedagogy, therefore access to teacher training and to a literature that examines effective pedagogy for information literacy.

If teaching of information literacy is to be seen as valuable by teachers and ultimately policy-makers then evidence of learning being transferred between subject areas would be most persuasive. This would demonstrate how information literacy contributes to the much sought after goal of students becoming independent learners.

Within this landscape where the dimensions of different definitions of information literacy sometimes appear to divide between a focus on information sources or the information user, the rise of the digital literacy debate adds a further complication, causing conflict and consuming energy. This is an energy that school librarians would rather see focussed on research into evaluating strategies for implementing information literacy and identifying effective pedagogy. A focus on communications technologies should not distract from the critical thinking required for use with all information sources and the creative processes of information literacy. It is in response to these concerns and as a result of a preliminary reading of the literature for the writing of the research proposal that the following questions have been designed to guide the research:

1. What does it mean to be information literate and is it changing in the new technological age?

The first aspect of question one is rooted in the desire to explore the meaning of information literacy in the secondary school setting. The second aspect of how new technologies may have affected the meaning reflects concerns expressed in the literature.

2. How can librarians and teachers work together to raise information literacy levels?

Question two aims to explore what is known about pedagogy for the teaching of information literacy. This is underpinned by the problematic nature of generating collaborative work between teachers and librarians. Most of the recent literature on collaboration has been produced in countries other than England and Wales and a study of this literature complimented by this empirical research could provide a useful contemporary insight.

3. What is the role of the librarian in raising information literacy in the school for both teachers and students?

Question three concerns the librarian's role and a desire to learn how to make it more effective from what is known in the literature and to find out from the empirical work what is understood of it and valued by teachers.

4. What is the understanding among teachers of the importance of information literacy and of the role librarians can perform in the teaching and learning of this subject?

Question four was designed to enquire into the teacher's perspective, to enable the research to really dig down to explore how information literacy is viewed by them and how they view the role of librarians.

The thesis has been structured into chapters as follows:

1. Introduction examining the purpose of the research, the context in which it has taken place, the influences that have shaped the research.
 2. Analysis of the literature to explore how information literacy has been defined over time and to identify what is known about collaboration between librarians and teachers.
 3. Research methodology.
 4. Presentation of the data
 5. Analysis of the data
 6. Conclusions
- Bibliography

1.1.7 Audience and outcomes – one more layer

The intended audiences for this research are those within the school librarianship community (both in the U.K. and internationally); those who conduct research in the area of information literacy; those who are responsible for teacher training; my own teaching colleagues and to a wider audience of teachers whose interests might be served by an awareness of information literacy, the role it plays within their own subject and how this can be facilitated by work with the school librarian.

This thesis will provide a picture of research into professional practice to reveal its multi-layered nature. It will provide the next layer of thinking for development of information literacy within this school. I have read and tried to work with many different definitions and strategies and find that none are completely satisfactory. I believe information literacy is more than finding and selecting information but also encompasses how information is used. It cannot be

developed as a linear process, as most learning does not happen in straight lines. It is not a superficial list of skills, but rather it is very much about the person, as a learner and their perception of task. This research will evaluate what is known from the literature with the elements distilled from the empirical work to produce useful and relevant insights for school librarianship.

As a member of the Information Literacy Taskforce that was organised in 2010 by the professional library associations in the U.K., the findings and conclusions of this research about information literacy: definition; interpretation of teacher concepts; effective pedagogy; a framework for implementation; a better understanding of the librarian's role as a leader of learning; and provision of a model for practitioner research by school librarians will be disseminated to wider audiences.

2 Chapter Two

2.1 Literature Review

The literature of information literacy crosses all boundaries produced by commercial, political and academic interests in different countries. Initial searches were made through the gateways and databases of both education and librarianship sectors for information literacy, information skills and collaboration. The nature of these open terms resulted in many hundreds of items and so these were further divided by sector e.g. higher education, workplaces, primary schools, secondary schools and each of these sub-divided in relation to information literacy or collaboration. Collaboration between professionals was also traced through the literatures of management and psychology in relation to organisations as learning environments. Further sub-divisions were made for theoretical material defining information literacy; information behaviour studies; and empirical research on teaching information literacy. In addition to the academic literature, material was also identified in the grey literature area of government reports, publications produced by professional associations and professional press publishers. This wider perusal of the literature of information literacy necessarily had to give way to a much more selective filtering. See Appendix Four for a list of bibliographic sources and more detail of inclusion and exclusion criteria used. These initial searches of the literature were not intended as a systematic review of the literature in the sense of an audit (Hammersley 2001) but rather as an exploration of the landscape.

Both the size of the literature, the scope of the research and the timescale involved made it necessary to draw some boundaries around the literature that would be described and interpreted from my practitioner's perspective. Items germane to information literacy in a secondary school setting and to collaboration between teachers and librarians were included. Priority was given to those works that contained the voices of teachers within them capturing their opinion and experiences. Another boundary concerned the geographical framework of the literature drawing a boundary around England and Wales. Yet practice does not evolve in isolation and so including the research literature produced in other countries considered seminal and of high influence to practitioners in England and Wales was also important. It is the voices of these researchers and of their participants that help to form a narrative relating the different approaches to thinking about information literacy. With each draft the narrative has evolved as my interaction with it progresses to develop possible hypotheses and different theoretical understandings. The literature as an entity has been my research colleague throughout the writing process.

The pathway taken in the literature search has been guided by my desire as a practitioner to consider works that relate to practice in the secondary school environment. These have been

both theoretical works and empirical research. The narrative begins with literature that defines information literacy and moves to work on how this has been translated into teaching approaches. Consideration of these has led to a division between earlier models, state-supported models and work that evolved more holistic-style models. The impact made by the digital revolution has been immense and inclusion of its reverberations in thinking about information literacy was essential. The concepts of the digital native and digital literacy are examined in the light of empirical work to identify alternative perspectives that contribute to thinking about information literacy. As the narrative moves to consider the role of the librarian and collaboration between teachers and librarians it was useful to separate theoretical literature from empirical literature to reflect on how these contribute to our thinking. My instincts as a practitioner have been fundamental in how I have searched and interpreted the literature as they guide me to place value on the voices that stimulate thinking about practice and move the discourse of information literacy in schools forward. Ultimately this chapter gives the reader a narrative picture of the practitioner researcher's experience of having grown with this literature and how a new understanding of it has been formed.

Politically one such international voice is provided by United Nations Educational, Scientific and Cultural Organisation (UNESCO) in its Alexandria Proclamation:

‘Information literacy empowers people in all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals. It is a basic human right in a digital world and promotes social inclusion in all nations.’ (United Nations Educational, Scientific and Cultural Organisation 2005)

This is why librarians want to engage with work that raises information literacy levels, but choices must be made about what should be taught, which teaching strategies should be used and how this can be implemented. These are hotly debated topics. The discussion of what should be taught has led to a plethora of definitions and models (Loertscher and Woolls 1997; Thomas 2004). The argument over what should or should not be included has consumed much energy. Opinion is also strongly divided over how information literacy should be taught. Should it be treated as a separate list of skills (Orrell 1991) or be part of a more holistic approach to teaching and learning (Limberg 2007). This leaves librarians to question whether to implement generic stand-alone sessions or develop teaching situated in a subject context within their school. Whichever approach is taken there is always the danger that the skills will not be transferred by students to other learning contexts. This is an important consideration when thinking about information literacy levels. An indicator for success could be that students are able to transfer what they learn between contexts. These decisions will also be influenced by the individual school culture, their expectations of the librarian's role and what those teachers understand about information literacy. Another hotly debated issue revolves around the digital

revolution and whether the proliferation of new media has changed the nature and purpose of information literacy skills.

In order to raise information literacy levels we need to look at what it means to be information literate and whether this has changed in the new technological age. These questions will be examined in the following sections of this chapter and lead to a definition of roles for information literacy to be performed by librarians. This will include a look at collaborative work with teachers in order to identify the factors that contribute to raising information literacy levels. In exploring the implementation of information literacy teaching it is necessary to look at change management and school improvement theory to see what can be learned about the processes.

2.1.1 What does it mean to be information literate?

Over the last four decades, information literacy has been examined in the literature of librarianship and information science reflecting the many attempts to define it and establish it as both a political and educational priority. Researchers and practitioners are drawn towards conceptualising their understanding of information literacy according to their context. These conceptions are rooted in that author or group's beliefs, concerns and organisational goals. The definition created by a group who work in higher education (Society of College, National and University Libraries 2003) is very different from one created in a school environment (Herring 1996). Each definition is designed to suit their perceived needs. The higher education definition places an emphasis on ethical use of information through accurate citation and referencing, whereas the school definition is concerned with understanding the assignment and finding relevant information. Some elements find their way into many definitions but there is no single conceptualisation that fits all circumstances. The time and energy spent by different groups in creating definitions, perhaps is an inevitable part of making sense of information literacy contingent upon the context in which it will be used.

2.1.1.1 Definitions

One of the earliest definitions produced by the American Library Association, describes the information literate person as someone who knows:

‘how information is organised, how to find information,
and how to use information in such a way that others can learn from them.’
(American Library Association 1989 in Bawden 2001 p. 229)

Six competencies were identified: i) recognising a need for information, ii) identifying what information would address a particular problem, iii) finding the needed information, iv) evaluating the information found, v) organising the information and vi) using the information effectively in addressing the specific problem (Bawden 2001 p.229). These represent a

librarian's own values for awareness of information needs, the knowledge of potential resources, their location, judgment of and presentation of findings and application of these for problem-solving. The association had created a conceptualization of the information literate person, which replicated the librarian's own image. This is the librarian's role outlined in the reference interview process (Brown 2008) which is contingent on the library context.

A progress report from the American Library Association (American Library Association 1998) called for an overhaul of education, in order to develop information literacy competencies in students and the general public. This was driven by their vision that higher levels of information literacy would lead to greater access to knowledge and thence to social and economic improvement, underpinned by the assumption that their 'information literate' person should be the example followed. This report (American Library Association 1998) contained no guidance on how to deliver information literacy or details of what the changes should be. Although the association has no official role in prescribing teaching methodologies or education policy, its campaigning and advocacy roles have led it to promote the development of information literacy work (American Association of School Librarians 2007). Many of its members work in education environments and it desires them to be active in promoting information literacy competencies and values. This places a clear expectation that school librarians will engage with the work of raising information literacy levels but without giving clear guidance on how to begin.

The U.K.'s national professional association for librarians finally produced their definition in 2004:

'Information literacy is knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner.'
(Chartered Institute of Librarians and Information Professionals 2004)

They characterised what it means to be information literate as: a need for information; the resources available; how to find information; the need to evaluate results; how to work with or exploit results; ethics and responsibility of use; how to communicate or share your findings and how to manage your findings (Chartered Institute for Librarians and Information Professionals 2004). Despite being a more recently written definition than the American Library Association concept, it too was produced without any guidance on how to achieve this ideal. The values represented in CILIP's definition are those of higher education based on the behaviours of the researcher. Indeed the definition was strongly influenced by Sheila Webber, a teacher who is based in higher education (Chartered Institute for Librarians and Information Professionals 2009). The environment in which CILIP produced their definition was a political one, it was intended for use by members in advocacy work promoting library services in an era of closures

and budget reductions. CILIP recognised the limitations of their concept (Chartered Institute for Librarians and Information Professionals 2009) but were motivated by political necessity to promote a rationale for the continuing existence of libraries and librarians that is valid in the eyes of institutional budget holders. Its policy is the promotion to central and local governments of this concept as the library world's contribution to the country's education, culture and economy. The need to make the link between the library's contribution to teaching and student attainment is clearly understood by many school librarians. These librarians are aware that their role is not statutory and exists at the discretion of the Head Teacher. Deciding how to implement information literacy teaching means making decisions about what it means to be information literate and what it will take to raise student attainment in relation to it.

2.1.2 Different approaches to teaching information literacy

Within the sector of school librarianship the focus on developing information literate behaviours has caused much debate over which information literacy competencies to include. Should this be taught as a generic set of skills separate from established subject curriculum areas or integrated within the work set by a teacher? In deciding how to proceed the librarian can look at what is published to support these processes. Some authors have developed whole packages of lesson materials (Orrell 1991) which focus on information literacy skills as a curriculum experience in their own right. For instance, a typical approach to these exercises aims to teach students how to use an encyclopaedia by asking them to look up and record interesting facts (Orrell 1991 p.17). The emphasis of the approach is placed on finding skills. Finding skills are important but so is the interpretation of information. There are no materials or strategies offered to teach how this might be used in different subject contexts or to guide students on how to interpret the information. Perhaps most notably there are no assessment procedures in the package to monitor student understanding. The concern associated with this approach is that the student may not retain the knowledge of how to use an encyclopaedia, or make the link to doing so, when needed as part of subject learning elsewhere in the school.

Where a topic and exercises have been created especially to give students an information literacy experience this has had mixed responses in terms of student engagement, particularly where they perceived this was not part of a formal examination (Brake 1980 p.43). This research concluded that teachers were positive about the idea but identified difficulties of insufficient time and the need for 'serious training' (Brake 1980 p.44). The value of Brake's research (1980) is that it represents empirically tested pedagogy whereas other works are published as pedagogy but minus an evaluation of their effectiveness in practice (Harada, Kirio and Yamamoto 2008). The latter example included some reflections by teachers about the

process in terms of their own role, but a critical evaluation of how effective the different elements were, is missing.

Another program that treats information literacy as a separate subject is offered by the Big 6 skills approach (Eisenberg and Berkowitz 1990) which is widely used by school librarians. This creates a linear process of six stages which begins with task definition, followed by information seeking strategies, location and access, use of information, synthesis and evaluation. It is popular because it presents librarians with a tangible framework with which to approach teachers to discuss information literacy. It sees the information as a problem to be solved (Eisenberg and Berkowitz 1990 p.20). At the use of information stage it asks the questions ‘what information does the source provide?’ and ‘What specific information is worth applying to the task?’ which require one to evaluate the source but it fails to address the reading strategies that the student will need to use and how to employ them. The synthesis stage in the Big 6 model offers the student a decision-making opportunity on the choice of outcome they will produce e.g. a poster or video, as opposed to methods on how to combine different pieces of information together to create a piece of work. This approach may offer the librarian an idea of topics to include when teaching information literacy but a list of what to do minus a set of strategies of how to do those things is of limited value in practice. Particularly as the majority of school librarians in the U.K. do not have a teaching qualification to guide them.

2.1.2.1 Evaluation of these approaches

Empirical work that has studied a generic approach to skills teaching (Williams and Wavell 2006) found that this resulted in a superficial process where no one skill was examined in depth. The process did not allow students to follow through and make connections with the more challenging aspects of search and processing of information. Raising information literacy levels, requires discussion of how and what to assess, so that progress can be judged. The Big 6 offers a generic process instrument for the evaluation stage where the outcome produced is judged for effectiveness and the information problem-solving process for efficiency (Eisenberg and Berkowitz 1990 p. 125). The instrument requires the student to respond to a number scale to indicate how well they used their time in relation to the six stages. This summative exercise only requires a quick tick box response from students and offers little insight as to how the student’s skills or understanding have changed, or indeed on the quality of the item produced. The intention to assess is good but the instrument is weak in design. This framework offers little support to judge whether the teaching has made a difference to student information literacy levels. More recent empirical research has found it is important to place an emphasis on dialogue (Williams and Wavell 2006) as it enables a better assessment of student understanding to be gauged.

The Big 6 approach (Eisenberg and Berkowitz 1990) was developed by librarians and like the American Library Association definition (1989 in Bawden 2001) its values are similar with its emphasis on the information resource, the finding of that resource and evaluating it. The vision driving this identification of a generic set of skills to be taught by librarians to others is, in part, an assertion of cognitive authority for the role of librarian. Promotion of this vision could be a reflection of the aspiration for librarians to have greater status in the school setting.

The plus model (Herring 1996) was evaluated empirically (Herring and Tarter 2006) by a higher education researcher and school librarian. It is a piece of action research that surveys student and teacher responses to working with the model and so it takes one step beyond the usual school librarianship material of simply describing how something was done. It concluded by recognising that information literacy in a school was different from that of a workplace and identified this for further investigation. It did not address pedagogy for synthesis and ultimately, like many of the models already mentioned, assessment was a tick box exercise to evaluate how well the activities of the process were performed. This means it fails to measure changes in student understanding or in the quality of their outcomes. It aspired to address the issue of transfer but recognised it had not done so by the conclusion of its research process.

Unfortunately these models for defining and teaching information literacy have little support in education as they are not part of the national curriculum or exam board guidance and therefore they are unfamiliar to teachers. So their use depends on how much engagement with teachers an individual librarian can muster. The most tangible opportunity for state support was provided in England by the national strategy for literacy and numeracy standards (Department for Education and Employment 2001).

2.1.2.2 State-supported information literacy

This national strategy was a government policy for state education and it introduced the Extending Interactions with Text (EXIT) model (Wray and Lewis 1997) which was created from an action research project with teachers led by higher education teachers to develop student use of non-fiction texts. There are ten stages: 1) activation of prior knowledge, 2) establishing purposes, 3) locating information, 4) adopting an appropriate strategy, 5) interacting with the text, 6) monitoring understanding, 7) making a record, 8) evaluating information, 9) assisting memory and 10) communicating information. Teachers and school librarians were given access to the national training that was provided and this gave an opportunity to develop collaborative work in schools focussing on information literacy. The training gave librarians access to teaching strategies such as the ‘modelling’ of skills for

students which in the absence of formal teacher training was empowering. Each stage of the EXIT model was accompanied by suggested activities and materials such as writing frames which provided librarians with ready-made lessons. Neither the training nor the materials were an adequate substitute for formal teacher training. For instance it is a weakness of the model that the role of differentiation is not addressed. This meant for the librarians involved it was only through experience that they might realise that a writing frame is not necessarily appropriate for every student.

When the EXIT model was translated into the National Strategy it was presented in a linear, resource-focussed form, re-enforcing the approach to information literacy teaching that was already dominant among librarians. This model portrays information literacy as a set of tasks that if followed would solve the 'information problem' which is the common feature of the approaches to information literacy so far examined. Very little attention is paid to the part of synthesizing the information in order to create something. Information is collected and placed in grids and/or frames, but how it can be moved from there into the child's own piece of work is not visible. If something is reduced to a set of separate steps, there is a danger that children will not link these together again by themselves, and be able to view the process as a whole. It reduces the teacher's part to providing exercises and modelling how to do them over a series of lessons and does not allow for the intuitive role they perform in adapting, interpreting and responding to children's specific learning needs at different parts in the process.

Generic models for information literacy seem to have a common pattern of listing 'what to do', as opposed to informing the process with a 'how to do it' and why it is important, component. Librarians need to consider how they view information literacy, whether it is about resources and therefore teaching involves running exercises on how to use them. Or whether information literacy is about developing a child's understanding of the complexity of knowledge and the role it plays in our lives which would require teaching a more critical approach to thinking about the learning experience.

These contrasting views of what it means to be information literate will not only influence what needs to be taught but also how it should be assessed. In the EXIT model assessment is made with a detailed breakdown of actions that a student would engage in during a research project. The purpose is to make student work at each stage visible so that it can be assessed by the teacher. It does contain a set of questions in the student's voice, e.g. 'How should I let other people know about this?' to prompt the decisions that need to be made at each stage in the process. These are similar to those in the Marland definition discussed in Chapter One (Marland 1981), but in contrast, in the EXIT model there is no overall evaluation question. This means there is no point in the process where the student is prompted to view the experience in

its entirety and reflect upon it. Critically there is no stage in the EXIT model for a student's self-assessment of their own learning which is problematic if your view of what it means to be information literate is concerned with an individual's understanding of themselves in relation to it. Self-assessment is considered important in developing a student's understanding and control over their own learning (Swaffield 2009). If the overall aim is to raise information literacy levels then consideration needs to be given to all forms of formative assessment including the role of dialogue identified earlier as a valuable method for gauging student understanding (Williams and Wavell 2006). Formative, unlike summative, assessment methods identify a way for the student to improve their performance.

The locus of control in a classroom usually rests with the teacher as they are the centre of cognitive authority in the eyes of the student. In contrast to the American Library Association definition which was written with the context of a library in mind, as its information literacy environment, the EXIT model's context is that of the classroom. The values of the classroom, learning and retaining knowledge, are expressed in elements such as stage nine 'Assisting memory'. The context in which Lewis and Wray (1997) produced their model was that of teacher education at a time when competency-based approaches to teaching and learning were dominant. There was an emphasis on a technical approach to teaching where it was believed that a formula of the right materials and techniques meant success would follow. This assumption had appeal for librarians who were working from a viewpoint of resources and library systems and it gave them a way into school discussions to try and establish information literacy teaching in their schools through this national strategy (DfEE 2001). Ultimately a policy may only be partially implemented if it is not also included in the framework for school inspection, without this enforcement, its recommendations may remain at the margins of school practice.

There were opposing viewpoints to the reductive approaches represented by the competence-based EXIT model. These critics supported a more holistic approach to teaching and learning, which focussed much more on the individuals involved and how their understanding could be developed, in response to different types of texts. One such supporter, Margaret Meek critiqued David Wray's approach, as demonstrated in the EXIT Model (Wray and Lewis 1997), because 'the teacher's view of learning and the learner's view of knowing become of less importance than instructions about the text and how it is to be 'tackled'.' (Meek 1996, p.18). She refers to this as a 'management of reading' and a positivistic approach to teaching (Meek 1996, p.18). This is an argument that could be applied to all information literacy teaching where the focus has been placed on competencies and resources, as these too, are less about the individuals involved and more about managing the problem of information. This goes to the centre of the

controversy over whether information literacy should be treated as a generic set of skills taught as a separate curriculum or if a more holistic approach should be taken to situate learning about Skills in a subject context tailored to the task and student's learning needs.

2.1.2.3 Holistic approaches to teaching information literacy

Supporters of a more holistic approach believe that reducing teaching to a set of technical strategies minimises or denies the complexity of all that is involved in teaching and learning. That complexity is derived from both external and internal influences, the socio-cultural practices of the school, the nature of the learning environment, the quality of student relationships and those between staff and students. To reduce our understanding of information literacy to a set of behaviours fails to acknowledge the complexity of skill and thinking that informs every aspect. If definitions for information literacy are contingent on the context in which they are going to be used, then perhaps the teaching of it too, should be relative to the student and their learning need and has been articulated as:

“a set of abilities for seeking and using information in purposeful ways related to task, situation and context... Influential studies have abandoned the idea of IL as a set of generic skills to be applied anywhere”
(Limberg 2007 in Markless 2008 p12)

Limberg's research was based on a series of empirical studies made in 1993-2004 in 11 secondary schools and one of the main conclusions was that information literacy should be viewed as a social practice shaped by the discursive practices of the context in which it takes place (Limberg 2007). This means that the institution's objectives and the socio-cultural practices used to achieve them, influence student and teacher approaches to the use of information. It assumes the institution's role is to teach a particular canon of knowledge (Limberg 2007) and this determines the teacher and the curriculum as the centre of cognitive authority (Wilson 1983). When teachers set tasks they have a recognised purpose and a learning outcome in terms of knowledge that is pre-determined. Limberg's research (2007 p.5) found that students resolve these tasks, perceiving that they were not based on genuine research questions and that there were 'right answers' to be found. This resulted in fact-finding behaviours requiring little judgement which yielded poor learning outcomes.

In contrast when authentic research questions were employed, which indicated the uncertainty of knowledge, the task required a deeper analysis and scrutiny of resources resulting in demonstrations of more sophisticated reasoning (Limberg 2007). The implication is that working with a reductive, competency-based model is easier for a librarian because it fits more closely with the socio-cultural practices of formal school education. Yet if we are intent on raising information literacy levels then we must provide higher quality teaching and learning experiences and resist some of the influences that wish to reduce information literacy teaching

to a set of routine tasks. The rise of information behaviour research included the design of the Information Search Process model (Kuhlthau 1993) which studied student attitudes and experiences contributed to a focus on inquiry based learning as a more holistic approach to teaching information literacy.

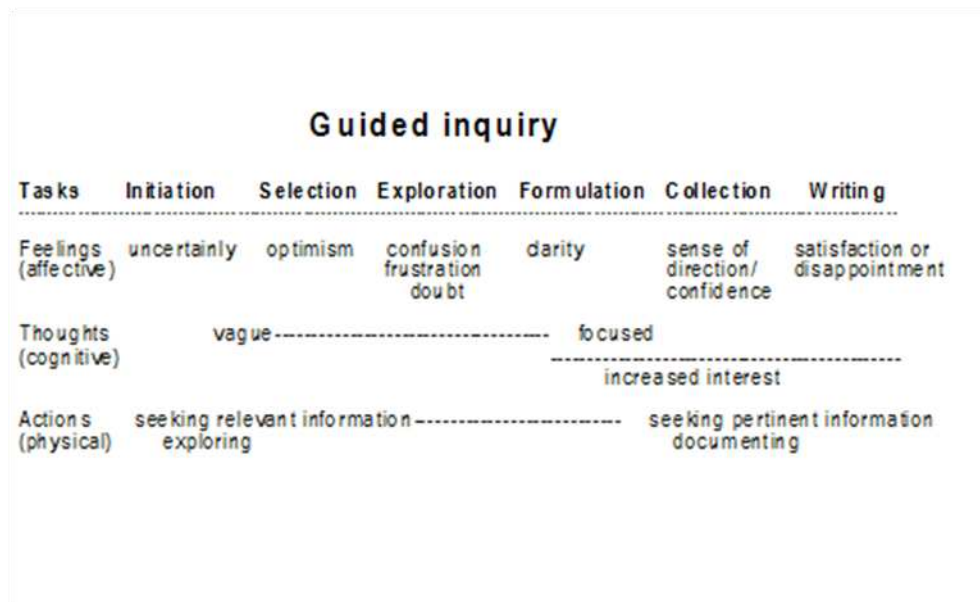


Figure 2.1 Model of the Information Search Process (Kuhlthau 2004 p.82)

The ISP model's acknowledgement of the emotional experience of learning and its impact on learning, created a departure from the models which focussed on behaviours and resources.

Subsequent research (Todd, Gordon and Lu 2011) has characterised inquiry learning as relevant and motivational by engaging the student's background knowledge to generate a question that drives the research. Then by affording choice of topic, questions and how to represent new knowledge it engages students in critical thinking, examining diverse and conflicting information. The teaching role is seen as intervening with supporting frameworks to develop knowledge through problem solving; analysis; synthesis; reflection; and management of the research process (Todd, Gordon and Yu 2011 p.77). This view of what it means to be information literate also provides some pedagogical insights. This might be because it is designed from empirical work with teacher-librarians. The vision is underpinned by the knowledge that its American audience are usually dual-qualified as teacher-librarians. In common with the EXIT model it has a stage for activating prior knowledge, but in contrast this inquiry based approach moves the locus of control to the student for the choice of research question and end product. It is an investigative approach rather than a spoon-fed experience. This resonates with other studies that recommend a more iterative enquiry process to facilitate a focus on the learner and their task (Williams and Wavell 2006 and Limberg 2007). So the

librarian is faced with a range of definitions, accompanied by models which are linear, staff-led and resource-focussed or more holistic inquiry based approaches which are student centred with an emphasis on dialogue and critique. The latter provides some pedagogical guidance but they do not explicitly address the issue of learning transfer.

The inquiry based approach to teaching information literacy skills can also take a generic, rather than subject-based approach. Moore's review of skills (1995), including metacognition, focussed on a student project about birds and was later critiqued (Loertscher 2005) for the superficial level of learning that took place. The task of finding out about birds where students decided on their own questions and final presentation resulted in basic fact-finding behaviours. Loertscher's response (Loertscher, Koechlin and Zwaan 2007) was to design instruction pathways for different curriculum subjects which involved students in making judgements. These require a degree of synthesis, evaluation of findings and a conclusion to be articulated but the issues of skill transfer and assessment were not addressed.

Kuhlthau's guided inquiry work (Kuhlthau, Maniotes and Caspari 2007) critiques project-based approaches as over-emphasizing the end product at the expense of the process skills. It suggests that the library provides context-based materials on which students base an answer to scenario-style questions which she has designed to meet the national learning objectives for a range of subjects like mathematics. It provides librarians with a useful way forward to show teachers how information literacy can be relevant to their subject. Its assessment method is based on a survey of learning indicators used by librarians (Kuhlthau, Maniotes and Caspari 2007 p.115), ranging from whether the student returned to use the library again, to observing skills being used independently in the library. This is not really an assessment of student learning but a method of evaluation of the library's impact on behaviour. In the U.K. we are now in an era where emphasis is placed on formative assessment methods and these lend themselves to a focus on the learning process as well as the end product. None of the works discussed so far address the issues of learning transfer between subject contexts or how skills may need to be adapted in different circumstances.

2.1.2.4 Learning transfer of skills

Transfer of learning by the student to different contexts is an important consideration when the aim is to raise information literacy levels; it is implicit to that goal. Every teaching approach has its strengths and weaknesses. All strategies for the implementation of information literacy – generic, separate skills teaching, subject domain programmes and infused across subject areas – hope to achieve a transfer of learning. Transfer is not an automatic process. If information literacy is taught generically, free of a subject context, the likelihood is that the skills will not be

linked by the student to use elsewhere in the mainstream curriculum. When skills are broken into behaviours and students are trained in them, the critical thinking for when and where else to apply them is often absent. Information literacy programmes situated in a subject context run the risk of skills remaining implicit, identified only with that subject, thereby limiting their capacity for transfer.

A review of research on this subject (Perkins and Salomon 1989) suggests that the relationship between generalised skill learning and domain specific skill learning has been over-simplified. It proposes that a synthesis of both generalised and domain specific teaching are required to encourage learning transfer to new contexts. A “low road” and a “high road” mechanism for transfer were identified (Perkins and Salomon 1989 p. 22). The low road refers to the practice of a skill until it becomes virtually automatic and the high road to the deliberate abstraction of a principle for consideration of use in other contexts. The foundation work needed to activate these roads to achieve transfer involves showing learners how problems resemble each other. This includes pointing out underlying structures; examining problem domains until they are familiar; and accompanying examples with their rules. This is most effective when the learning takes place in a social context. This allows rules to be generated by the learners and principles to be socially fostered and contrasted. Nurturing transfer of learning identifies several ways forward for the pedagogy of information literacy in raising student attainment levels.

So transfer itself must be taught, the elements examined and their applicability in other contexts explored (Nisbet and Shucksmith 1986, p.21) in order to make students conscious of them. When students are unfamiliar with new contexts they are often reluctant to initiate and apply their learning. So support via ‘mediation, guidance, and even instruction by others somewhat expert in those operations’ is needed to re-enforce the previous learning and help in its transfer (Beyer 1997, p.241). In practical terms this means that school librarians alone, cannot be responsible for the teaching of information literacy, so issues of whole staff training and practices become crucial. Once proficiency by a student has been achieved, the opportunity to practice these skills in ‘ever-widening variety of contexts’ (Beyer 1997, p.272) is needed. This needs to be supported by reflection and review methods at the end and beginnings of lessons, to develop a student’s metacognitive awareness. So in implementing this in a school setting there needs to be a shared language and understanding of what is meant, held by the teachers, so that students do not get confused by a mix of terminology and practices. Introducing these ways of working is not easy when teachers have other priorities and are working under time constraints to achieve them.

So skill transfer in learning is considered important and therefore we must see it as a capacity of the information literate student in a secondary school. Where learning transfer in relation to information literacy learning has been studied it found that generic teaching methods failed to

engender transfer (Tabberer 1987 p.80). This leaves us with questions about how to develop this capacity in a secondary school context although some answers are to be found in the literature (Perkins and Salomon 1989; Beyer 1987; Nisbet and Shucksmith 1986).

When considering how to raise information literacy levels, we are also faced by a changing educational context, with the rise of digital media and the subsequent information explosion that it has brought. The following section will consider how this has impacted on what it means to be information literate.

2.1.3 Digital Media

The emergence of the internet in the 1990s led to an information explosion and creation of a culture where material can be created by anyone for everyone, accessed at anytime from anywhere. The concept of digital literacy grew in response to the range of new digital media causing a maelstrom of questioning about how the nature of learning might be changing and whether new information literacy pedagogies needed to evolve in response. The concept of the ‘digital native’ was born and education was challenged to catch up:

‘Digital natives are used to receiving information really fast.
They like to parallel process and multi-task. They prefer their graphics before their text rather than the opposite. They prefer random access (like hypertext). They function best when networked.
They thrive on instant gratification and frequent rewards.
They prefer games to “serious” work.’
(Prensky 2001 p.2)

Prensky’s first words (2001) have resonated and attracted the attention of researchers who have worked to ascertain an empirical viewpoint about the nature of learning and how it might have changed in relation to the digital environment. Clearly the use of technology by students for both leisure and education has increased (Jones 2010) but there is

‘little evidence to support a claim that digital literacy, connectedness, a need for immediacy and a preference for experiential learning were characteristics of a particular generation of learners.’
(Bullen et al 2009 p.10).

The notion of the ‘new millennial learner’ attracted further criticism (Bullen et al 2009; Oblinger and Hawkins 2006) when its literature, led primarily by Prensky (2001), Oblinger (2003) and Tapscott (1998), was surveyed and found to be without any empirical evidence or theoretical foundation but predominantly opinion and speculation (Bullen et al 2009 p.4). The picture of technology use amongst students is much more complicated in terms of gender, age and nationality and no evidence of a demand for changes in pedagogy at university level have been found (Jones 2010). Even without demand for change from students, education is being offered a range of new digital media and teachers are exploring its use for teaching and learning

(Wesch 2008). This exploration has shown that student use of digital media is limited and it is an erroneous assumption to think they are all experienced, confident users of Web 2.0 tools (Wesch 2008).

2.1.3.1 The 'digital native' and information literacy

In assessing the Google generation's information literacy skills (Rowlands et al 2008 p.295) there is little evidence of improvement which raises some serious concerns about the lack of progress made in the teaching of information literacy in schools and universities. My own experience agrees with this research finding that when internet searching, young people spend very little time evaluating information for relevance, accuracy or authority. When they extract items, it is often in large pieces which are then pasted into homework documents. The level of synthesis taking place is low. The behaviours I observe in my practice resonate with Limberg's findings (2007) that in the culture of a school, students are set tasks which encourage a find-the-fact response, rather than develop a questioning attitude which lends itself to the critique of information. Research has also found that they do not analyse their information needs accurately and often develop poor search strategies in the absence of identifying useful keywords, tending to view rather than read documents (Rowlands et al 2008 p.295). In the school setting I have observed that students wish to find the answer in the Google list of results itself, just as they once searched for answers on the spines of books. Research on the views of secondary school teachers (Williams and Wavell 2007, p.206-7) found that they did not include defining information need as a step in the process. Perhaps this is so, because it is implicit in the setting of the task and this is usually done by the teacher when planning the lesson.

Both young and old have some common traits in the digital environment, log analysis of searches has found that regardless of age all had a tendency towards 'horizontal information seeking' (Rowlands et al 2008 p. 294) and demonstrated a 'flicking' behaviour, relying on abstracts rather than whole documents. This reflects concerns expressed by teachers in higher education where there is a feeling that reading and research by students is becoming superficial (Brabazon 2007). Based on my own experience at secondary school level I would say a superficial approach to information has always been dominant, but what has been changed is the speed at which this is now achieved. Overall Rowlands' research (2008) concludes there has been an over-estimation of the impact of I.C.T. on young learners and an under-estimate on older learners. My observations agree with Rowlands' research that the influence of tools like Google have helped create expert skimmers who struggle to explore information more deeply. Therefore one can conclude that the younger generation are not expert searchers and it is a dangerous assumption to make as it erodes an understanding of the relevance for information literacy teaching.

Digital media offers new ways to engender engagement and collaborative working between students (Wesch 2008) but it also has implications for their information literacy abilities. Information literacy definitions have previously included evaluation of sources but in response to the proliferation of digital information objects, the emphasis on critique needs to be increased. Notions of authority, discourse, semantics, devices used by creators need to be considered alongside the additional technical and creative skills of producing digital media. The principles of textual analysis need to be applied equally to digital objects as they would to more traditional looking texts. The profusion of digital media can lure people to focus on the technology itself rather than the content and how it contributes to good teaching and learning. There are concerns that this techno-centric approach in information literacy means hardcopy resources have simply been exchanged for electronic ones, so that teaching focuses on aspects of the technology rather than the information literacy skills of the student (Brabazon 2007).

Raising information literacy levels needs to be more than the mechanical skill of using new devices but about the learner's increase in understanding the purpose of the object, their capacity to interpret its information and create new knowledge with it. Teaching how to search the internet has to be more than the best tip on using Google's search engine, students also need to be guided to develop their thinking skills to critique the process of search itself, as well as their findings. In this way they can be supported to extract the principles (Perkins and Salomon 1989) and engender transfer of their learning to different contexts. Therefore to focus on the principles of information literacy, regardless of the information medium being used, could be a helpful way forward.

These techno-centric concerns, raised mainly by higher education researchers (Brabazon 2007), may not be met by teachers in the secondary school environment as there is some evidence that they feel overwhelmed by the range of sources now available to them (Williams and Coles 2007 p.196). In my experience there has been a great deal of change in the last six years, technology-wise in schools, which have required teacher engagement. There is interest from many teachers, in what is possible, but time pressures make it difficult for everyone to become familiar and confident in their use. As in any community there are those who are keen to pioneer I.C.T. and others who follow and are comfortable to colonise in the well-trodden territory.

2.1.3.2 Digital literacy versus information literacy

Some writers have rejected the term information literacy in favour of the concept of digital literacy. They associate information literacy with library models which they believe do not suit all people in all contexts and lead to linear views of the process (Bawden 2008). Some believe (Beetham, McGill and Littlejohn 2009) that the term and the models should be avoided because

they have failed to secure support outside of the librarianship profession. It is true they have not transferred to other fields, but this failure could be because their design is contingent the context in which they were written. To abandon the concept of information literacy is a failure to understand this subtlety of application. Digital literacy is a weaker concept in my view, because it only refers to online objects, whereas information literacy refers to all sources of information in all formats. Indeed I would suggest that digital literacy is not understood any more or less, in comparison with information literacy, because its conception is equally contingent upon the context in which it is conceived.

This is an example of the transition from information literacy to digital literacy as a preference.

Information literacy:

‘must subsume all the skill based literacies, but cannot be restricted to them, nor can it be restricted to any particular technology or set of technologies. Understanding, meaning and context must be central to it.’
(Bawden 2001 p. 251)

Information literacy became a component of digital literacy:

1. ‘Underpinnings
 - a. literacy per se
 - b. computer literacy
2. background knowledge
 - a. the world of information
 - b. nature of information sources
3. central competencies
 - a. reading and understanding digital and non-digital formats
 - b. creating and communicating digital information
 - c. evaluation of information
 - d. knowledge assembly
 - e. information literacy
 - f. media literacy
4. attitudes and perspectives
 - a. independent learning
 - b. moral/social literacy’ (Bawden 2008 p. 29-30)

Both were written in the context of a higher education academic environment concerned with producing future librarians and information specialists. The second definition possibly reflects the changes in course offer over time to a larger focus on technological approaches to knowledge management. The elements of independent learning, moral and social literacy reflect the values of the context and the writer as a higher education teacher, by indicating the ability to learn at a distance from the teacher, a moral concern for the nature of intellectual property and an aspiration to research and disseminate findings. When compared to the American Library Association (1989) and Chartered Institute of Librarians and Information Professionals (2004) definitions it too represents the librarian’s professional knowledge and skills in relation to resources with the additional emphasis of performing those through digital media.

The question that school librarians need to ask is what should the difference be, between information literacy in a school context from those definitions created in and contingent on a higher education setting? What is required for a functional form of information literacy and how is this different from the principles, which if extracted and understood by students would empower them to become more autonomous as learners. If students predominantly experience a curriculum that is more directive than exploratory (Streatfield and Markless 1994; Limberg 2007) then they are less likely to benefit from the factors that raise information literacy levels, such as setting their own research questions. It may not be possible for a school librarian to influence this aspect of school culture. At what point and to what degree should or could school students work more independently? Independent may mean something different from being autonomous as a learner within a secondary school context.

What it means to be information literate continues to be hotly debated and is mired with conflicting issues. Opinions range between a concern with access and how to use the resource (Eisenberg and Berkowitz 1990) to a focus on the learner and their task within a subject context (Limberg 2007) and this has been complicated by a pre-occupation with new technologies and what they represent (Prensky 2001; Bawden 2008). The literature has offered insights into information literacy practices linked to improving information literacy skills (Williams and Wavell 2007; Todd, Gordon and Lu 2011). The choices of how to proceed have implications for the role of librarian and there is even less agreement about what that role should be, than there is about the nature of information literacy.

2.1.4 What is the role of the librarian in relation to information literacy?

The goal of raising information literacy levels in a secondary school setting would be greatly enhanced if underpinned by an established role for the librarian (Morris 2010). This is challenged by a lack of official recognition for that role which leads to wide variance in execution between school institutions and means it is hugely influenced by the individual school culture (Streatfield and Markless 1994). To realise a holistic approach where information literacy is situated in the teaching of a subject librarians and teachers will need to work more closely. If our aim is to raise information literacy levels through collaborative work then this needs to be better understood to identify the factors that support or weaken the process. The following sections will look at what is understood in the literature about the librarian's role and what is known about collaborative information literacy work with teachers.

2.1.4.1 Role

In England and Wales school libraries are not a statutory requirement, so their presence is a cultural, educational and financial choice made by the individual head teacher. A head teacher's vision for the library will determine if their priority is to have the space minded or whether it is to develop information literacy work (Office for Standards in Education 2006). They decide on the content of job descriptions and person specifications and they may or may not appoint a qualified librarian. Their perception of the role of the library in a school is fundamental to all that follows that appointment (Office for Standards in Education 2006; Streatfield and Markless 1994). Without central government recognition of the school librarian role, there are no national standards established for school libraries and this means provision, role and practice at a local level can be extremely diverse (Office for Standards in Education 2006).

The OFSTED inspection framework is a powerful external influence on the way local authority controlled schools structure their work. School libraries do not appear explicitly in inspection frameworks, but have featured in OFSTED advisory documents produced as supporting materials. OFSTED's view of school libraries has moved since its inception, from a checking on subject resources to a vision that sees them at the centre of reader development (Office for Standards in Education 2012). In the most recent framework, literacy has been flagged as an essential judgement and advisory material encourages school leaders to support the librarian in their work suggesting "Early lessons in Year 7 involve students working in the library and learning to use all the resources." (Office for Standards in Education 2012 p.33). This recognises a role in providing access and support in using resources, but does not lend itself to a more holistic teaching approach for information literacy. OFSTED recognises the librarian's role not only in reader development, but in information literacy, working collaboratively with teachers and creating partnerships with other schools and libraries (Office for Standards in Education 2012; 2006).

An earlier evaluation of school libraries by OFSTED indicated good practice as drawing on generic information literacy skills which are 'given a subject specific slant' to aid transfer of learning (Office for Standards in Education 2006 p.19). Schemes of work were focussed on as the major source of evidence in addition to observations of practice. In relation to the teaching of information literacy they found a mixed picture of practice and a key finding was the need to develop a coherent information literacy programme for students in response to the poor quality sessions observed during visits (Office for Standards in Education 2006, p.3). Both planning and student learning outcomes were deemed poor by the evaluation. Interestingly assessment methods for information literacy were not included in the evaluation. OFSTED are supportive

of school libraries, the role of the librarian and the importance of information literacy teaching (Office for Standards in Education 2012; 2006) and yet there are so few coherent programmes and so little evidence of information literacy levels being raised. So what roles are currently being fulfilled by school librarians and what role might be most needed in relation to information literacy?

2.1.4.2 Teaching roles for school librarians

Instruction roles for librarians identified during empirical work (Kuhlthau 1993 and Kuhlthau, Maniotes and Caspari 2007) have been characterised as i) organizer - no instruction; ii) lecturer – orienting instruction; iii) instructor – single source instruction; vi) tutor – strategy instruction; and v) counselor – process instruction (Kuhlthau 1993, p.147). The roles of instructor and tutor might be more closely identified with the resource focussed, more generic style of skills’ teaching and the role of counsellor with the holistic approach that centres on the learner’s need in relation to their task. How far these roles are fulfilled depends upon the librarian’s qualifications, knowledge, experience and confidence (Morris 2010; Streatfield, Shaper and Rae-Scott 2010). If these factors are in place, then choice of role is influenced by the librarian’s values and perception of their responsibilities (Markless 2009). Where a librarian’s preference for role in relation to information literacy does not coincide with the expectations of the head teacher and the culture of that school then completion of it will be affected (Streatfield and Markless 1994). In my own experience the diversity of role expectation across the school organisation is such, that these different instruction roles (Kuhlthau 1993) suit work with some teachers and some departments at different points over time.

In later work Kuhlthau (Kuhlthau, Maniotes and Caspari 2007) has evolved her theory of librarian roles to become i) resource specialist; ii) information literacy teacher; and iii) collaboration gatekeeper (Kuhlthau, Maniotes and Caspari 2007, p. 57). These roles now indicate higher levels of teaching and leadership skills, bearing in mind that this is written for American dual-qualified teacher-librarians, so how far this is transferable to the U.K. situation where librarian training is so different is debatable. It identifies the successful information literacy role as one who teaches the concepts of access, evaluation and use by maintaining long-term relationships with students and fostering a “constructivist learning environment” (Kuhlthau, Maniotes and Caspari 2007, p. 57). This reflects Kuhlthau’s values regarding inquiry based learning and a holistic teaching approach as a result of all her research experiences suggesting these are more likely to be successful in raising information literacy levels (Kuhlthau, Maniotes and Caspari 2007). This resonates with my own experience of what it takes to make information literacy teaching effective for students and teachers: a long-term relationship with students so that one is familiar with ability and character so that teaching can

be tailored; keeping communication open, as the onus lies with the librarian, to be pro-active and to follow-up on assessment work for evaluation purposes.

A study of 12 school libraries (Todd, Gordon and Lu 2011) has identified the roles of the librarian in work improving information literacy levels as i) resource provider; ii) facilitator of integrating skill with content instruction in an inquiry-based learning approach; iii) developer of capabilities in research and digital technology; iv) and creator of a learning environment that emphasizes inquiry, thinking, reflection and communicating. These were the views of teachers and librarians in the U.S. who reported high levels of collaborative information literacy work in their schools. Again this has to be seen in relation to the dual qualification that exists for American school librarians but it does offer a vision for evolving librarian roles in this country underpinned by a holistic approach to teaching information literacy.

So factors identified thus far which are critical to the existence of coherent information literacy programs are the librarian's qualifications; knowledge; experience; perception of role; school leadership expectations; school culture; collaborative work with teachers; and an emphasis on inquiry rather than fact-finding curriculum approaches (Todd, Gordon and Lu 2011; Morris 2010; Markless 2009; Williams and Wavell 2007; Limberg 2007; Office for Standards in Education 2006). Reluctance by school librarians to engage with their pedagogical role is well documented (Hopkins 1984; Rafste and Saetre 2004 and Morris 2010) and there is agreement in the literature that the fundamental issue is one of training. Teacher training is absent from librarianship courses in the United Kingdom (Chartered Institute for Librarians and Information Professionals 2013), so perhaps high quality information literacy teaching is not an entirely reasonable expectation, of the current post holders. Even with sufficient personal factors in place to allow the information literacy role to be fulfilled by a librarian, the other problematic aspect of this work is building good quality collaborative work with teaching colleagues.

2.1.5 Collaboration

In schools there are time pressures, competing curriculum priorities and exam agenda, so collaborative work for information literacy is surrounded by conflicting demands and tension (Markless 2009; Hopkins 1984). Effective school improvement sees staff professional development as the key strategy in moving matters forward.

Professional learning is characterised as:

‘staff work collaboratively to set clear goals for student learning, assess how well students are doing, develop action plans to increase student achievement, while being engaged in inquiry and problem-solving’
(Hopkins 2007 p.87)

This underlines the importance for a librarian in promoting information literacy work through involvement in staff training and meetings that discuss teaching and learning. This is underlined by the lack of guidance from other sources for teachers in developing information literacy and the use of the library in their subject area (Williams and Wavell 2001 p.8). A librarian's participation in wider school training could provide teachers with that guidance.

'Collaboration gatekeeper' is one of the roles that has been assigned to the librarian who is engaged in information literacy work (Kuhlthau, Maniotes and Caspari 2007 p.57) and this consists of i) co-ordinating the guided inquiry team; ii) keeping communications open; iii) using flexible management skills; and iv) communicating with the community. This image sees the energy for initiating, developing and maintaining information literacy work coming from the librarian which is a pragmatic view when one realises that this topic is absent from teacher education courses (Morris 2010; Williams and Wavell 2001; Lincoln 1987). Collaboration between librarians and teachers has been characterised as i) co-ordination; ii) co-operation; iii) integrated instruction; and iv) integrated curriculum (Montiel-Overall 2005). If the roles identified earlier (Kuhlthau 1993) are matched to this collaboration model, it is clear that there is no information literacy role for the librarian who focuses only on organising resources:

1. Counselor – Integrated curriculum
2. Tutor – Integrated instruction
3. Instructor – co-operation
4. Lecturer – co-ordination
5. Organiser

Figure 2.2 Librarian Roles (Kuhlthau 1993) are matched to Levels of Collaboration (Montiel-Overall 2005).

This collaboration model (Montiel-Overall 2005) sees improved information literacy learning occurring when team teaching at the integrated instruction level is achieved but indicates the real breakthrough is when both the skill and subject content become integrated. Both of these roles and collaboration theories agree that effectiveness for information literacy happens when situated in subject contexts (Kuhlthau, Maniotes and Caspari 2007; Montiel-Overall 2005). Other empirical work has identified factors that are crucial to collaborative work processes such as clarity of understanding for the terms used by both professionals (Lincoln 1987; Tabberer 1987).

This clarity is essential if a shared vision for the information literacy curriculum and a teaching approach to it are to be jointly developed. Studies in schools have found that where collaborative work began with the term 'information literacy' it gradually widened to 'learning'

(Lincoln 1987 and Tabberer 1987). These collaborations were following a generically taught linear series of skills and the teachers found the narrow focus too prescriptive and simplistic, which is in contrast to teaching situated in a subject area, where information literacy reveals its complexity and allows more meaningful connections to be made by students (Williams and Wavell 2006, Lincoln 1987 and Tabberer 1987). Indeed more recent research found that the dominant conceptualisation of learning in the library was not “information literacy” but a tendency to focus on specific skills that needed to be taught as part of an inquiry into curriculum content (Todd, Gordon and Lu 2011 p.9). Differences in understanding and perception of priority exist between librarians and teachers, such as the emphases placed on identifying keywords and the role of metacognition (Streatfield and Markless 1994, p.86; Williams and Wavell 2007 p.207-8) and these are more likely to be resolved when a collaboration has joint planning and evaluation processes. Additionally, it has been recommended that the topic of school libraries be included in teacher education courses (Morris 2010; Williams and Wavell 2001). If this coincided with teacher training for librarians it would go some way to creating a shared understanding for information literacy and the nature of collaborative work needed to raise information literacy levels.

2.1.5.1 Division of roles between teachers and librarians

Diffidence about role and responsibility between teachers and librarians has resulted in collaborations that have a traditional looking division of labour with teachers focussed on reading and note-making and the librarian demonstrating use of the library catalogue (Valentine and Nelson 1988, p.76 and Streatfield and Markless 1994, p. 79). I have used part of Michael Marland’s model of information literacy (1981) shown on page 5 to illustrate this traditional division of labour showing those tasks most associated by the teacher with the role of librarian in brown. The steps in blue are those which the teacher focuses on and are often linked to assessment. This division of roles would appear to still be the situation as found in a recent U.K. national survey of school libraries which reports that 86.8% of qualified school librarians had information literacy teaching roles, but concluded there was an over-emphasis on tasks connected with finding and selecting information (Streatfield, Shaper and Rae-Scott 2010, p.12-13). This means that we have a long way to go if we are to move beyond this level of co-operation between professionals to achieve an integrated team teaching curriculum experience as outlined by Montiel-Overall’s collaboration model (2005). Most importantly it highlights the lack of librarian participation in the assessment of information literacy levels. I have illustrated this by using Michael Marland’s model to depict the process using colour to delineate the librarian and teacher roles. The tasks marked below in blue are those that involve assessment and subsequently this is where a teacher focuses their energies:

Information Literacy

(Marland, M. 1981)

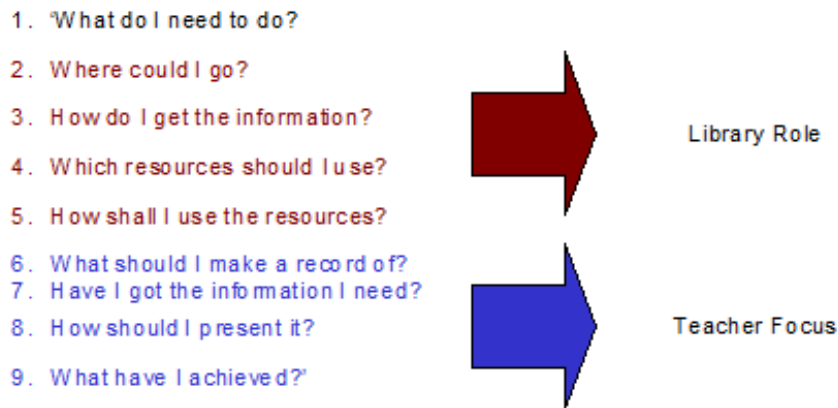


Figure 2.3 The traditional division of labour between librarians and teachers is illustrated by my colour coding of the steps in Marland's model (1981).
Brown: librarian Blue: teacher

Assessment determines student attainment and potentially identifies if information literacy levels have improved, however if the division of labour described thus far remains unchanged, then the librarian does not have a role in this process.

2.1.5.2 Assessment tools and implications for collaboration

Assessment did not feature strongly in the definitions for what it means to be information literate examined earlier in this chapter (Wray and Lewis 1995; Herring 1996; Eisenberg and Berkowitz 1990). Access to assessment criteria and knowledge of student outcomes allows one to evaluate the teaching process. In the American literature, methods for assessing information literacy learning are recognised as embryonic and those that do exist in the form of checklists (Eisenberg and Berkowitz 1990) only appear to be relevant to more generic styles of information literacy teaching. Supporters of inquiry-based learning point to the use of portfolio evidence and student self-assessment (Loertscher and Woolls 1997) but there does not appear to be any empirical research as yet to examine their use. In a later work Kuhlthau mentions librarians' observations of behaviour as an assessment method (Kuhlthau, Maniotes and Caspari 2007 p.115) but as discussed this is more about evaluation of the teaching process than a measure of change in a student's understanding. Assessment of information literacy and a collaborative role for the librarian in this practice has yet to be fully examined in the research literature. Perhaps the reality is that collaboration between a librarian and teacher must involve some division of labour and assessment is a key part of the teacher's role. Evaluating the

assessment outcomes is a valuable way of reviewing the teaching process and perhaps this is where a librarian should be involved.

Assessment assumes student progress and as just discussed the checklists (Loertscher and Woolls 1997, Callison 1998, Grover, Fox and Lakin 2001) that exist are limited in scope. This has been looked at from another direction where use of the school library and the impact this makes on student learning has been evaluated with comparisons of perceptions made by teachers, librarians and students (Williams and Wavell 2001 p.30) resulting in a set of indicators: motivation, progression, independence and interaction. The empirical research recognised these were more easily assessed by the teacher than the librarian and recommended that the librarian keep records of achievements made by students (Williams and Wavell 2001 p.116). If done, this might help build a case that use of the library impacts on learning but it does not directly measure individual student information literacy levels. The list of features for each of the indicators is quite lengthy and complex so engagement with this tool would probably be low for teachers who already feel their workload to be overwhelming. A tool for assessing student progress in information literacy that is understood by both teachers and librarians and can be adapted for use in any secondary school context, both in the library and the classroom is needed.

An example of successful information literacy assessment, via the keeping of logs and participating in discussions, is illustrated in the publishing of some American practitioner research (Harada 2005):

‘Assessment was a shared and continual experience for both instructors and students.’
(Harada 2005 p.63)

This resonates with my own experience of researching practice at Key Stage 5 which was described in Chapter One which also involved keeping diaries and interviewing students. Although these methods can capture evidence of students experiencing metacognitive awareness and improved performance, it is too time-consuming to put in place for every student and class engaging with information literacy work. One might also argue that teaching that is the focus of a research project will attract more time and energy compared with other occasions.

Two other pieces of literature have been identified that address the notion of student progress: the research and study skill objectives for Years 7 to 9 produced for the Literacy Across the Curriculum policy (DfEE 2001) and the steps towards note-taking ability (Tabberer 1987 p.106-107). The former lists what students should be taught in each year group but is very simple in design. For instance it suggests synthesis be taught in Year 9, yet students are implicitly required to synthesise their understanding in all subject contexts from the beginning of Year 7.

It does not indicate what different levels of performance in synthesis might look like. Its linear nature and content are too simple in design to be of great value in practice.

The second tool mentioned (Tabberer 1987) provides teachers with a picture of instructions to move note-taking experiences from a basic descriptive task to evaluation and finally to one where personal judgement must be used. It is a guide for teachers to support different levels of practice and implicit within it is the principle that students move from rote behaviour with complete reliance on the teacher to shared practice, critique of practice, to the beginning of independence before a sense of autonomy is reached. It is a pity this principle was not clearly articulated. If it had been extrapolated further as a process this could have been used for other information literacy skills it could be adapted for different subject contexts and school tasks. Perhaps this was not further developed as the national curriculum was introduced to England and Wales shortly after this project was published.

2.1.5.3 School culture and its influence on collaboration

Collaboration between librarians and teachers is also influenced by the teaching styles that dominate a school's culture (Valentine and Nelson 1988; Streatfield and Markless 1994). In schools where teaching is more formal and classroom-based, teachers made less use of the library and had lower expectations of the librarian's role, whereas those that focussed on individualised learning and project or inquiry based learning were more likely to involve the school librarian in planning learning activities (Valentine and Nelson 1988, p.76). The ethos for a school's culture is largely set by the head teacher, he or she is crucial in recognising the role of skill teaching (Streatfield and Markless 1994) in creating the conditions for collaboration and in determining how far the library becomes integrated into the teaching and management of the school (Office for Standards in Education 2006, p.1; Morris and Packard 2007; Shannon 2009). The principle of cognitive authority and its influence on school culture begins with the head teacher.

Cognitive authority in a school context refers to a person or object, which in the eyes of the student, represents a source of expert knowledge from which they will learn (Hopkins 1984; Wilson 1983). In my own experience the concept of cognitive authority is a key one, in the eyes of the students this is held by the teachers, in the eyes of the teachers this is held by senior colleagues and in the eyes of all, the Head Teacher's lead is key. His or her support is vital in establishing the librarian's status in the eyes of others.

Equally in a team teaching situation, teachers can devolve some of their cognitive authority upon the librarian's role, by making it explicit to students that this is the librarian's area of expertise and this can be reciprocated by the librarian referring to the teacher as the subject

expert. Conversely where a teacher introduces the librarian without making this authority explicit, it can signal that this session will be of less value (Streatfield and Markless 1994, p. 87). So when planning collaborative work it would be advisable to discuss the role of authority. If all the authority for subject knowledge remains with the teacher then opportunities for students to question and critique knowledge could be very limited (Hopkins 1984) and this could lead to a pre-determined set of tasks which has been found to limit improvement in information literacy levels (Limberg 2007; Williams and Wavell 2006). Overall the implication is that the professional role of the librarian is less likely to be acknowledged and included in a teaching process by the teacher where the school culture is not conducive to collaborations between professionals.

The librarian as research skill expert and the teacher as subject and pedagogical expert are potentially complimentary roles for information literacy collaborations. The literature has shown that for these roles to be effective certain factors are required: leadership support (Office for Standards in Education 2006), shared understanding (Lincoln 1987; Tabberer 1987) and a teaching approach that views knowledge as something to be explored and constructed rather than as a series of found objects (Limberg 2007). Introducing information literacy work into a school setting also requires an examination of how to innovate change in an educational environment in order to guide the process.

2.1.6 How can we implement information literacy teaching in a secondary school?

Examining change management theory in relation to information literacy will increase our understanding of the problematic nature of developing this work in secondary schools. Theory on introducing change in educational settings (Fullan 2007) has several key considerations: need, clarity, complexity, quality and practicality of the initiative, local factors, head teacher, the role of teachers and external factors.

Those involved must perceive the need to change and that the future state will be better than the current situation (Fullan 2007). For instance, students are more likely to retain and use skills, when they are taught at the point of need as opposed to hearing about them in a stand-alone generic talk about skills (Todd and Kuhlthau 2004 and Tabberer 1987) because they can immediately see the link between the learning and a better assessment score. Equally therefore teachers must perceive that not only will the teaching of information literacy be relevant to their curriculum needs and priorities but it will make the process easier or make the outcome better. “There is some feeling that the information skills issue in the school is related to using the library and looking things up.” (Lincoln 1987 p.73). If the goals, benefits and processes are not communicated clearly then the danger is that this will not be perceived as relevant and the

change will fail (Miles 1987 in Information Management Associates 2009 p.7). Therefore in introducing any information literacy initiative establishing a clear link between what is already happening and how this can be improved is essential.

The second aspect of Fullan's theory, clarity, relates to language and understanding. Clearly there is still much work to do in this area as criticisms are made about the term information literacy and how little understood it is outside of librarianship (Bawden 2008; Beetham, McGill and Littlejohn 2009). In part as discussed in the digital literacy versus information literacy section this is about conflicting perceptions of what it means to be information literate within the librarianship profession. In the first instance school librarians need to define information literacy so they can articulate and communicate what it is, to teachers. As we have seen throughout this chapter this is not straightforward as the literature contains conflicting definitions, a variety of models and so little on pedagogy.

At a local level the librarian needs to participate in school forums in order to discuss information literacy with teachers (Hopkins 2007). This could engender a process where joint meanings and understandings are evolved for the inclusion of information literacy in teaching and learning. Training to provide "action images" of what the skills look like in practice is essential to the change being adopted by staff (Miles 1987 in Information Management Associates 2009 p.7). Without clarity of language and knowledge of what the change will look like, there is increased anxiety for both teachers and librarians, roles will be unclear and this can affect the level of engagement.

Theories that read like a series of bullet points appear prescriptive and deceptively straight forward but the reality of practice in any organisation is a complex one. Equally in a school setting it can be observed that 'Educational change is technically simple but socially complex' (Fullan 2007 p.84). Indeed one might go further and acknowledge that the complexity is such that it is often far from technically straightforward too. In my experience when a proposal is introduced for changes to teaching within a school, how well it is received, will depend on the quality of the relationships with those listening. Their level of cognitive authority in the eyes of the audience will be tacitly questioned. The listeners will make judgements about the quality and practicality of the proposal. The history of change in the school will be influential for these speakers too (Fullan 2007). If these have been positive experiences then they are more likely to be open to further change, but where these have been negative, there may well be some resistance to new proposals at that time. The issue of quality raised by Fullan (2007) is a multi-layered one in terms of how teachers perceive the proposal itself, the quality of their relationship with the presenter and that person's cognitive authority in their eyes.

The local factors referred to in Fullan's theory (2007 p.93) relate to support for these changes from outside of the school, for instance, from the local education authority. Information literacy is not a government sponsored policy so it is unlikely to be on the agenda of any education authority in the United Kingdom. The role of the head teacher and their influence (Office for Standards in Education 2006) was examined earlier in this chapter and in relation to Fullan's theory their role is recognised as crucial. They set the tone for a culture of collaboration and can enable the librarian to move proposals for information literacy forward. If there is a culture of collaboration then teachers will not be working in isolation but have the "will" (Miles 1987 in Information Management Associates 2009 p.7) to exchange ideas and develop activities for information literacy teaching.

Complexity surrounds all stages of change from initiation to implementation and continuation. The elements of Fullan's theory (2007) regarding implementation also relate to the continuation of the change, the process of embedding it, to become part of a school's culture. Staff training on the initiative to develop and enhance their "skills" (Miles 1987 in Information Management Associates 2009 p.7) must be put in place to achieve the envisaged change. This should remain an on-going practice, to inculcate new teachers and to engender evaluation and innovation by the current team. Again the head teacher's vision for school development is important (Office for Standards in Education 2006) as this will determine whether information literacy remains a priority when competing with new incoming measures and other innovations that must be accommodated.

The external factors mentioned in Fullan's theory (2007 p. 98) refer to the role of central government and the opinion held by others outside of the school regarding the education system. The professionalism of teachers, the nature of what they do and should know, has been subject to intense scrutiny by both media and government policy (Burns 2012; Children, Young People and Schools Committee 2011). The measurement of teaching and learning via school league tables, OFSTED inspections and performance reviews mean schools place emphasis on attainment and outcomes rather than on the skills and processes involved. This means change for information literacy will need careful facilitating to find a balance between teaching content and a focus on skills.

The school setting is a complex, turbulent environment that generates messiness and ideas (Fullan 2004 p. 10) and it is the individuals who are key to navigating a way through. Conflict, disagreement and setbacks are part of any change experience (Markless et al 2009 p.155). There has been a recognition that professional development is key to raising standards, hence the creation of teacher learning communities (Leahy and Williams 2010; Hopkins 2007). These communities are driven by the notion of the teacher as a researcher of their own practice. For

some teachers this represents a much needed sense of personal autonomy over professional practice, an approach originally promoted by Stenhouse (1975). In schools where they exist they provide librarians with the potential to become more formally involved in the discussion of teaching and learning (Hopkins 2007) and most importantly, through the experiments, to introduce information literacy. Sharing ideas and creating the knowledge needed to take the change forward comes from contributing to the bigger picture that is school improvement.

2.1.7 The implications of the literature review for the empirical research

The performance of schools and teachers are measured through exam results, academic monitoring of students, lesson observations and performance reviews of teachers. Therefore if information literacy is to be included as part of the school's agenda by head teachers and teachers they must see how it contributes to raising attainment. So, the overall purpose of this research, to explore how information literacy levels in a secondary school can be raised, is a pertinent issue for librarians and teachers.

In order to influence the school agenda librarians need to articulate clearly what information literacy is and some of the ways it can be taught (Fullan 2007; Miles 1987 in Information Management Associates 2009). Many definitions of information literacy have been published and each makes sense of the subject contingent to the writer's own context, within their particular circumstances, for their specific tasks (Eisenberg and Berkowitz 1990; Wray and Lewis 1997; American Library Association 1989 in Bawden 2001; Society of College and University Libraries 2003; Chartered Institute Of Library and Information Professionals 2004). As a practitioner in a secondary school, reading these definitions often creates a sense of dissonance. There is a feeling of affinity when reading Marland's nine steps (1981) but written more than thirty years ago and proven in practice to have serious limitations (Tabberer 1987) it falls short of supporting practice today. Interviewing teachers in this secondary school will enable me to identify how they view and understand information literacy and therefore to examine what they see as relevant in today's context. An understanding of this perspective could help inform future proposals for developing information literacy.

A study of the empirical research in relation to the data and the literature will be analysed so that I can define what it means to be information literate in a secondary school context of the 21st century. Throughout this review, I have examined the literature to identify different aspects of teaching, learning and school culture that contribute to raising information literacy levels, but this led to the question: what do these levels look like? There have been attempts to create self-assessment tools (Eisenberg and Berkowitz 1990) and ways of measuring the library's impact on learning behaviors (Williams and Wavell 2001). None have captured a picture of personal progress and changes in understanding. It is not easy to assess these features without a sense of

the schema that illustrates the elements of what progress looks like in the learning of information literacy. In an attempt to address this notion of progress I have created a table which is shown in chapter five with an explanation of how this has been derived from reflecting on the literature and infused with my own professional experience. It is intended as a proposal to stimulate discussion.

If we identify what levels of information literacy look like then this needs to be underpinned by methods for supporting students to make progress between them. There is not a great deal of empirical research published identify pedagogy that has been found to be effective for information literacy, so in this research I will seek pictures of practice for developing these skills. We need a deeper understanding of the strengths and weaknesses of practices within the socio-cultural context that is this secondary school. I will draw together what the literature has found to be effective with what I discover in the empirical research to identify useful teaching practices. Examining strengths and weaknesses of current practice may also identify ways for librarians and teachers to work together to raise information literacy levels.

The theories about librarian roles in the literature (Kuhlthau 1993; Montiel-Overall 2005) will be compared and contrasted with the views that emerge from the data in this research. This will help ascertain what it is of the librarian's role that is currently valued by the teachers. This may provide material for fellow librarians to reflect on when developing aspects of their role. By comparing this data with views from the literature gaps or weaknesses may be perceived and this could point a pathway forward, for future development.

The literature has identified factors important when implementing change in a school setting (Fullan 2007). By exploring the teachers' perspectives the research will be able to study the smaller picture of which factors affect daily practice. The literature has shown how the librarian's role can be affected by these cultural factors (Limberg 2007; Streatfield and Markless 1994; Valentine and Nelson 1988). So by ascertaining the degree of teacher understanding for the importance of information literacy and the teaching aspects of the librarian's role, we may be able to gauge how much work has yet to be done.

2.1.8 Outcome of the literature review

Study of the literature has helped to develop these research questions:

1. What does it mean to be information literate and is it changing in the new technological age?
2. How can librarians and teachers work together to raise information literacy levels?
3. What is the role of the librarian in raising information literacy in the school for both teachers and students?

4. What is the understanding among teachers of the importance of information literacy and of the role librarians can perform in the teaching and learning of this subject?

Reflection on the range of issues that create conflict and controversy in the field of information literacy has led to three main themes emerging as particularly relevant to this research:

- Theme One: The meaning of information literacy
- Theme Two: The absence of effective pedagogy for information literacy and learning transfer
- Theme Three: The librarian's role and the implementation of an information literacy agenda

Identifying these three themes will facilitate and focus the writing of the analysis in Chapter Five.

Theme One: The meaning of information literacy

Issues

Many definitions of information literacy have been produced by professional associations, higher education researchers (Eisenberg and Berkowitz 1990; Wray and Lewis 1997; American Library Association 1989 in Bawden 2001; Society of College and University Libraries 2003; Chartered Institute Of Library and Information Professionals 2004) and this has divided opinions about whether these skills should be viewed generically or identified with subject contexts. This leads to further discussions as to how far sessions should be resource or task-focussed, whether they should be reduced to a range of techniques or take a more holistic approach with an emphasis placed on the learner (Tabberer 1987; Kuhlthau 1993; Meek 1996; Limberg 2007; Williams and Wavell 2001)). Depending upon these choices are implications for how likely students are to transfer learning between contexts and for the type of teaching that will be needed to enhance this possibility (Nisbet and Shucksmith 1986; Perkins and Salomon 1989; Beyer 1997). Concern about these issues has been magnified by the advances in technology and subsequent explosion of information created by the internet.

Theme Two: The absence of effective pedagogy for information literacy and learning transfer

Issues

There is controversy over how these skills should be taught, whether this should be in stand-alone lessons or built into schemes of work. Choice of pedagogy will be affected if the curriculum is closely led by a teacher as opposed to a more explorative approach with an inquiry learning style (Streatfield and Markless 1994). Many assessment rubrics for teachers to use

have been published but very little empirical work has been done to find which are effective and this leaves open the question of where the balance should be struck between information literacy skills and subject content (Loertscher and Woolls 1997). There is comparatively little pedagogy that has been evaluated empirically (Tabberer 1987; Williams and Wavell 2007) to guide thinking and this is compounded by the absence of information literacy from teacher education and the lack of teacher training in librarianship education (Morris 2010). Effective pedagogy for learning transfer of skills has been identified in the literature (Nisbet and Shucksmith 1986; Perkins and Salomon 1989; Beyer 1997) but in my experience seems little known by either librarians or teachers.

Theme Three: The librarian's role and the implementation of an information literacy agenda

Issues

Implementation of information literacy teaching is determined by the leadership and culture of the school (Office for Standards in Education 2006; Shannon 2006; Fullan 2007). The chosen curriculum approach whether it is closely directed or how far it is exploratory it is in nature, affects how information literacy is perceived and included by them (Streatfield and Markless 1994). Subsequently how far a librarian can contribute to the raising of information literacy levels depends on how their role is viewed by teachers.

These themes help provide a structure for Chapter Five and are examined through the analysis. Prior to this the methodological issues in relation to the empirical research will be examined in Chapter Three and the data presented in Chapter Four.

3 Chapter Three

3.1 Research Methodology

This chapter will examine the purpose of this research; provide further background about the research design, setting and method of data collection. From an overall point of view it is difficult to characterise this research within one methodological approach. Its pragmatic nature combines elements of case study, grounded theory and ethnography but cannot be reduced to any one or other of these forms. In the next section of this chapter I will look at how my research design has been influenced by previous published research to clarify the choices made in this study. From the practical point of view the process was one of gathering predominantly qualitative data from interviews with professional colleagues. The design of the interview schedule, sample selection method, the interview process and the steps taken to analyse the data will be discussed later in this chapter. The approaches taken on issues of ethics, steps to reduce bias and address validity will be examined.

The purpose of this study is to contribute to the professional debate by practitioners on information literacy and the issues involved. The following table outlines the rationale behind each research question and how it contributes to the research design:

Rationale	Research Questions	Research Design
<p>The aim of studying information literacy in a secondary school requires the issue of technology to be addressed. It has permeated all aspects of school life. There are many opinions about its impact on student learning and this has been extrapolated to include information literacy. This study aims to uncover what is understood about its influence on information literacy in a secondary school.</p>	<p>1. What does it mean to be information literate and is it changing in the new technological age?</p>	<p>This question will be examined through an analysis of the literature in order to discern how the concept has evolved over time and by researching what this means from the teacher's perspective.</p>
<p>By exploring what is understood about pedagogy for information literacy it may be possible to throw light on how the different professional roles can contribute to this process.</p>	<p>2. How can librarians and teachers work together to raise information literacy levels?</p>	<p>The interview data will identify how the role of librarian is valued by teachers in the raising of information literacy levels and this will be analysed within the frame provided by the literature regarding effective practice and collaboration.</p>

<p>The picture of school library practice in relation to information literacy is a mixed and fragmented one. This study hopes to contribute to the professional discussion amongst practitioners of these issues.</p>	<p>3. What is the role of the librarian in raising information literacy in the school for both teachers and students?</p>	<p>The theories about librarian roles evolved in the literature will be compared and contrasted with the views that emerge from the interview data.</p>
<p>An exploration of the teacher's perspective may be able to give librarians a deeper understanding of the complex dynamics at work in this environment which influences the teaching of information literacy.</p>	<p>4. What is the understanding among teachers of the importance of information literacy and of the role librarians can perform in the teaching and learning of this subject?</p>	<p>The understandings of teachers with regard to these two issues will be mined from the interview data and the implications analysed for reflections on future practice.</p>

Table 3.1 Relationship between rationale for research questions and the research design

3.1.1 Methodology Approach

A number of approaches to the design of this research were considered. A strategy was chosen that was considered best suited for its ability to help answer the four questions that have been written to guide this study. Throughout the research process there were a myriad of choices in relation to methodology and there follows an account of how these were influenced and made.

The design of this research has been influenced by my study of Kuhlthau's work on Seeking Meaning (1993) in which she identified research in librarianship which studied the efficacy of systems from a source, technique and search technique view point as the 'bibliographic paradigm' (1993 p.2). Kuhlthau discusses the emerging research approach which focuses on the library user's perspective as constructivist in nature and this is viewed as important in how it influences the user's process and their outcomes. Kuhlthau neatly expresses this as:

'The bibliographic paradigm is based on certainty and order, whereas the user's constructive process is characterized by uncertainty and confusion. (Kuhlthau 1993 p. 8)

This strongly resonated with my own experience where the most valuable professional learning for me has come from study of services and activities from the user or participant's perspective. This study has been influenced by this approach in that my work aims to find out more about information literacy from how a teacher views it within their own world of teaching a subject within their classroom. My work also involves features which are not those of constructivism such as the involvement of the literature as an important component within the analytical process. From the viewpoint of pragmatic, practitioner research I believe it would be a shortcoming to not include the thinking produced by the good quality empirical work of others when considering data in this study. I research in the hope that my work will give material to others for reflection within their own contexts, so it is only natural that the literature provides that service for me. Involving the literature does lead at one point in this study, to an analysis of the teachers' descriptions of information literacy teaching with the findings of published research about methods most likely to encourage independent learning. So further layers of analysis take place in this study that move beyond examining a construct of the participant's world. Given that part of the problem librarians experience in developing an information literacy teaching role is the lack of a common understanding for information literacy, research that explores how it is understood by a range of teachers, may help librarians to find ways to connect with the work of their colleagues.

Robson (2011 p. 28) identifies some features of a pragmatic approach to research and many of these resonate with my own beliefs. I do think dualisms between different traditions can be unhelpful and that in terms of research whichever method or methods that suit the question best should determine choices made. I view knowledge as ever-changing and would proffer research conclusions as tentative in the understanding that matters do not stand still but continue to evolve. Robson suggests pragmatists prefer action to philosophising and certainly action is important in the endeavour to search for better ways of doing things but philosophy is important in how it informs one's values. For instance my view of knowledge is affected by my librarianship philosophies regarding the collection as a representation of its society. I see the library as organic in the way that it is always evolving and responding to change in its community. Knowledge is not static because the community is not stationary. The organic nature of the library is intertwined in the creation of new knowledge and how human understanding of it changes.

Although I would say my approach to research design is pragmatic and I do agree strongly with some of Robson's observations (2011 p.28) such as the inclination to endorse empiricism to determine what will work in practice. Indeed this can be seen as having an influence on the literature included in the review written in Chapter Two (such as Rowlands et al 2008). I do believe one's values play an important part in the research process which is

why a picture of my experience has been described in Chapter One so that a reader can see the steps that have led me to this study. I am less sure about the sense of being 'driven by anticipated outcomes' (Cherryholmes in Robson 2011 p.29) as I find the satisfaction of research lies in the unexpected finding.

The Seven Faces of Information Literacy (Bruce 1997) is a seminal work in the study of information literacy using phenomenography within the setting of a university. Its focus on the meaning of information literacy interested me and led me to initially consider phenomenography as a possible methodological approach. I studied its use by Williams and Wavell (2007) with secondary school teachers as an interesting example directly relevant to my sector. They studied teacher conceptions of student information literacy through the teacher's meaning of information literacy in relation to their information use, their teaching subject and the range of their experiences including work with students. Student information literacy is a narrower focus than the one I wanted to explore and I intended to include several other aspects: collaboration, pedagogy and the librarian's role in relation to information literacy from the teacher's perspective. In exploring what it means to be information literate I could not anticipate and did not want to determine in any way the nature of these findings and certainly not to the point of committing myself to an outcome space which would form a structured and collective meaning. I wanted to cast my net with an open mind to receive all data as potentially able to shed light on the range of aspects of interest when capturing individual teacher's perspectives.

My work has been particularly influenced by Lawrence Stenhouse, the model he presents of the teacher as researcher (Stenhouse 1975) which he believed enables a space for reflection and self-determination and this principle of professionalism has always inspired study of my own practice. So much so, that I visited the LASS Archive (Library Access and Sixthform Studies) at the University of East Anglia in 2005 and read through a number of transcripts from Stenhouse's final research project, a multi-site case study. Sadly the work was not completed before his death in 1982. The case study methods included teacher interviews, non-participant observation and document analysis carried out by a team of research assistants collecting both quantitative and qualitative data. It was not feasible for me to attempt this scale of research within the limits of my resources but I considered the elements of case study for my design. My school role restricts me from assuming the task of non-participant observation because the timetable release time required would be unsustainable and that I am perhaps too well-known by students and staff which would influence the observation data. I considered document analysis problematic in my research setting as the majority of current documents that would

mention information literacy are library authored items. Reification of information literacy practice has not been the agenda in recent years compared to 15 years ago when being written into schemes of work was a priority. Memories of browsing through the LASS Archive transcripts had stayed with me because one could almost hear the teachers speaking those words. Their voices had been captured and even though time has passed they still have much of value to offer. This inspired me in the design of the analysis stage to deal with my interview data as complete data sets, maintaining loyalty and respect for the quality and content of each voice.

Case study research has influenced my choices about the presentation of data and here it is described by Cresswell:

‘a typical format is to present a detailed description of each case and themes within the case, called a **within-in case analysis**, followed by a thematic analysis across the cases, called a **cross-case analysis**, as well as assertions or an interpretation of the meaning of the case.’
(Cresswell 2007 p. 75)

There is some similarity in the way that I have selected three voices to describe in detail to illustrate the diversity of the picture. I have followed this by data from the remaining nine voices in order to enrich the picture, with connections being drawn to the themes identified in the literature study.

Tabberer’s multi-site case study (1987) and Lincoln’s single-site case study (1987) both included some action research methods. Tabberer’s study (1987) focussed on student behaviours in relation to information literacy and although the scale was beyond my resources I was impressed by the level of detail captured in his interview data with teachers. Action research is the methodology with which I have most experience but for this research it will not be suitable as the aim is not to introduce and study a change in practice. Lincoln’s study (1987) was initially formed by an outside researcher to study a school’s information skills policy and the teachers’ response was one of dissatisfaction with the idea that their teaching could be judged by only one hour of observation (Lincoln 1987 p.4). Consequently a change in methodological approach was introduced and an action research framework was used with the teachers involving participant observed lessons and research diaries. The case study experienced a number of logistical difficulties but produced valuable findings with regard to pedagogy and the relationship between librarians and teachers. It also clearly illustrated the sensitivities that research can provoke amongst those who participate and this strengthened my resolve to keep my participants fully informed and subsequently involved in a verification process of their data.

The research has produced qualitative data based in one school setting so its bounded nature may appear to have the qualities of a case study but it would be a misunderstanding to simply

see the research through this lens. In research looking at the impact of the school library on learning (Williams and Wavell 2001) focus group discussions helped to develop a framework of learning indicators and then multi-site case study methods were used to study the framework in use. I considered using focus group discussions with teachers, particularly when I realised the value of the differences between subject perspectives, but it was not possible to co-ordinate teachers' time into a joint meeting for timetable and workload reasons. On further reflection I wanted to avoid any influences arising from a group membership. In previous research with Key Stage 5 students where interviews took this form it was easy for one voice to dominate which required more management on my part and perhaps in a group views are mediated under the influence of those other listeners too. This contributed to the decision that individual teacher interviews were the most appropriate method to capture perspectives unalloyed by those influences. The priority in this study has not been to produce generalizable findings but to dig down to achieve a depth of view.

Williams and Wavell's case study (2001) was in a sense an evaluation of the framework and a school library's impact on learning and my research is not intending to evaluate or produce a set of recommendations. Implicit in asking the research questions in this study is the desire to improve practice, but the purpose of this research is understanding through exploring perspectives which may lead to further collaborations, rather than specific judgments and outcomes. It is a search for a better understanding with conclusions that are tentative in nature, reflecting this study's size and modest scope. To adopt an evaluative approach, would be to assume there is an explanation and that the problematic nature of information literacy can be reduced to one, which is at odds with my view of its complexity. Exploration is my purpose expressed in the working title for the thesis: How can we raise information literacy levels in the secondary school which in later stages became Information literacy and the secondary school.

In an earlier stage of literature reading, research based on a grounded theory study (Lloyd 2003) set in the workplace of the fire service was examined and it concluded that context in the practice of information literacy was important and encouraged librarians in other 'landscapes' (2006) to consider this with the implication that information literacy cannot be reduced to a list of skills. This research took place in a completely different setting and sector but it led me to explore the possibilities of grounded theory as a possible methodology. Grounded theory aims to generate theory systematically from the data, but I was aware of seeing this research as an opportunity to study the existing literature so that I could as a practitioner gain in knowledge but also crystallize my notions about information literacy in response to the literature and subsequently

through the empirical research experience. Although the data in this research went through several analytical stages as it would in grounded theory research, the factual and conceptual findings in this study were rooted outcomes were rooted in the literature study as well as the empirical research. Studying the literature has been a very important part of this research process and has contributed to question formulation, categorisation of the data and to the findings.

Grounded theory has systematic procedures for the analysis stages: open coding, axial coding and selective coding. The structure for analysis pre-exists the data and I felt this would not be sufficiently open and flexible for my study. The analysis in this study does go through more than one coding stage as described later in this chapter but axial coding as described by Robson (2011 p.149) does not necessarily allow for those unique pieces of data that might not easily fit into a pre-existing category, but retained within the data picture, might later lead to a new sense of understanding.

This exploration of information literacy through its literature and from the perspectives of secondary school teachers provides material for reflection and will be the basis of future research within this setting. This work sits within the interpretive stand as described by Hesse-Biber and Leavy (2011 p.16) because it is situated in a disciplinary context; its focus is subjective experience, small-scale interactions and it seeks understanding in order to make meaning. Researchers working in the interpretative strand 'value experience and perspective as important sources of knowledge.' Within that strand it shares some characteristics with ethnography in that I have spent a long period of study within the research setting and this deeper insight has helped me to make sense of the data, to assist in identifying themes and categories. The observation methods synonymous with ethnography have not been used in this study, yet the goal of gaining an insight into a culture is a shared one. In the case of my study the teacher's perspective provides a glimpse around the corner of the classroom door clarifying thoughts in relation to the research questions as described in Chapters 5 and 6 and with the realisation that future research is needed in order to walk more deeply into each of those classrooms.

3.1.1.1 The Research Setting

This work has taken place in a local authority run secondary school located in an inner city area. The school is a single-sex boys school from 11-16 of approximately 1445 students with an eight form entry. In addition there is a mixed-sex sixth form. It was one of the first comprehensive schools opened in 1956 and specifically recruited teachers who believed in mixed-ability teaching. As one of the forerunners of this style of education it attracted a high level of funding and opened with classrooms, laboratories and workrooms filled with state-of-the-art equipment.

By the early nineties it was no longer a popular choice of school in the community. It was under-resourced and under-performing and it gradually lost the comprehensive nature of its intake. The intake became dominated by students with weak literacy levels, behaviour problems and the exam pass rate achieved was very low.

In the last fifteen years a whole range of factors have turned the school into an over-subscribed and once more popular community school. It sees itself at the cutting edge of developing ways of working with boys, as well as a pioneer of restorative behaviour practices and is viewed as a centre of excellence and training in these methods (Levens 2011; Margaret Thorsborne & Associates 2011). 38% of the student body have special educational needs and the school has developed a learning support department with a specialist team to work with students who are autistic. The socio-economic profile features nearly a third of the students registered for free school meals and in a recent internal survey 16% of Year 7 and 8 students do not have access to a computer at home. The pastoral care overall was rated as outstanding by Ofsted (Office for Standards in Education 2011). The school became a specialist in the performing arts nine years ago and moved into a new building four years ago, as have other schools in the surrounding area and this has made recruitment of Year 6 students, highly competitive. The school has maintained its over-subscription which means its desired balanced comprehensive intake. In recent years more subject departments put students into sets rather than maintain mixed ability classes in response to pressures to raise attainment figures. This issue is hotly debated, as mixed-ability teaching remains a deeply rooted part of this school's culture.

The school has always had a library run by a professionally qualified librarian, but like many parts of the school, by the nineties it was under-resourced and in need of modernization. With a newly appointed librarian there was a sufficient investment made to automate the service and introduce the school's first internet connection. In response to the weak literacy levels of the students, reader development was a priority and over the next decade a strong reading culture was created. This is seen as a contributing factor to the slowly rising exam pass rate (Morris 2010 p.26). As the professional nature of the work increased a second member of staff was added.

The original library was circular in shape with a class set of tables and chairs in the centre for teaching and study purposes accompanied by four computers for student use. It was too small in relation to the size of the school community and the demands being made of it. In the new building the library was designed to sit at the centre of the school, it more than doubled in size, easily accommodating a hundred students at a time or two classes and additional students working independently. It is an open plan space with two class set-ups, one for study and one

designed for the use of computers. A further additional member of staff was added at this point in recognition of the high usage made of the space by teachers and students.

There is a large book stock, 12 desktop computers, 30 laptops, 30 iPads and a small journal collection. Subject departments do not have extensive physical collections but rely on the library to supply box loans of topic material when requested. In recent years electronic resources are also sourced and shared with departments. There is a medium sized professional education collection and a current awareness service of journal articles provided for teachers.

All Year 7 and 8 students have a lesson based in the library each week and older classes are booked in on an ad hoc basis as required by their teacher's curriculum needs. The librarian, although based in the library, also works in classrooms, laboratories and performing arts spaces as required. The Year 7 and 8 classes based in the library are from the English department and they focus on reading which is assessed termly as part of whole school assessment procedures. This is done jointly by the librarian and teacher which means knowledge of all students is gained by the librarian and this represents a unique set of relationships and overview of the school.

My experience of teaching information literacy is described in chapter one and has been studied for previous doctoral assignments and results presented both in school and externally at conferences. My practice received national validation in 2011 (Woods 2011). I am a member of an action research group (Learning Resources Action Research Group) and this was founded in 2000 by a cohort of librarians who completed a Master of Education degree together and is chaired by Sharon Markless. It is a forum where we can discuss ideas, look at published research and critique our own work and professional practice. This research began in 2010 and has grown from those previous experiences and layers of research. In order to take my work forward at this point I needed some form of evaluative exercise to find out more about the teacher's perspective of information literacy to inform my future process and actions.

3.1.1.2 Interview Design

The semi-structured interview was chosen as the strategy for collecting data from a range of twelve teachers within the school because it offers several advantages. Unlike a questionnaire which can reveal patterns of behaviour, the interview can look for the reasons driving behaviour in much greater depth. As this research wishes to uncover perceptions and meanings, the interview is far more likely to generate rich descriptive material to help answer those questions. In the pilot and design stages one is able to shape the tool to reflect the research questions and during the interview process there is some flexibility for clarifying concepts, misunderstandings

and to use prompting questions to explore a little more deeply (Newby 2010 p.342). The main disadvantage, particularly as a lone researcher, is the amount of time it takes to manage the whole process from design to transcription. This is reflected in the time given by those teachers who took part, ranging from thirty to ninety minutes, with forty-five minutes as the average length for an interview. It is this practical aspect that limited the number of interviews to twelve.

The design of the interview schedule had several stages of preparation:

1. Initial question ideas (Appendix Six). This was a brainstorm of all possible questions in relation to the topics of the research questions.
2. Pre-trial responses to these question ideas (Appendix Seven). The pre-trial stage was useful in identifying, both questions that would and those that did not, elicit answers relevant to the research questions. It was done with two teachers who would have been asked to participate in the interviews, but who were due to leave shortly on maternity leave, so would be unavailable.
3. Analysis of a selection of questions in relation to the research questions (Appendix Eight). The Learning Resources Action Research Group mentioned earlier, reviewed this analysis and their critical reflections (Appendix Nine) helped evolve the schedule contained in Appendix Nine. This helped ensure my approach and data collection instrument were agreed as valid (Hycner 1985 p.297).
4. This pilot interview schedule was used with two respondents (Appendix Ten). These two colleagues were then excluded from the final selection of potential participants.
5. The final interview schedule is in Appendix Eleven.
6. An illustrated guide was provided in case a participant was unsure about the term information literacy (Appendix Twelve). It was chosen because it provided a guide in both text and graphic form which would suit different learning preferences.

3.1.1.3 Sample Selection

The process of selection had several stages in order to select a group from the school's teacher population of 99 people. This began with an analysis of staff to identify those with and without experience of information literacy and a history of collaborative work with the librarian. It was based on my personal reflections and influenced by the analytical structure of the development planning process that codes items as roots or links believed to be strong or weak (Hargreaves and Hopkins 1991) (Appendix Five). This was an important exercise in reflection to determine a range of characteristics in the sample. For instance in relation to the following question:

Q. What does it mean to be information literate and is it changing in the new technological environment?

It was important to ensure a cross-section of people in terms of age and experience as this involves discussion of what information literacy means and how it has changed over time. There could be differences in perception between someone who has been teaching for thirty years compared to two years and I wanted to allow for that range of view to be expressed. Equally with the following question:

Q. How can teachers and librarians work together to raise information literacy levels?

This needed responses from people with experience of collaborating with the librarian, particularly in the area of information literacy but also from those who have very little direct experience of such a collaboration to identify difficulties that may exist. In a sense the analysis provided a snapshot capturing a pattern of relationships with the librarian at one moment in time (Appendix Five). It provided a starting place to consider how different voices might contribute to the research questions.

The analysis has identified those with strong and weak information literacy roots coupled with strong and weak collaboration links in relation to the librarian. The definitions for these are:

- Strong information literacy roots: a record of jointly working with the librarian including planning, team teaching and assessment/evaluation tasks that have had a strong information literacy focus; or a reputation for work in the school that focuses on developing this in the curriculum, pedagogy and in colleagues' teaching practice.
- Weak information literacy roots: may use the library for project work with some input from the librarian on mechanics of how to search for information; or has little or no formal contact with the library on information literacy.
- Strong collaboration links: works or has worked closely with the librarian on some aspect of teaching and learning which may or may not include information literacy.
- Weak collaboration links: little or no record of working with the librarian on any aspect of teaching and learning.

The grid (Appendix Five) has a seventh column which identifies other factors which may also indicate a potentially valuable contribution could be made to the research questions such as:

- Long experience
- Newly Qualified Teacher status
- Personal, Learning and Thinking Skills developer – led work in core subject
- Musical Futures – this has a particular approach to information seeking which moves the locus of control from the teacher to the student so that they research and learn how to play an instrument in small groups (Price and D'Amore 2007).

A comparison between newly qualified teachers and teachers who have been in the profession a long time might reveal differences in approach to both topics because of age and experience. Long term members of staff will have seen the proliferation of support staff roles and therefore the range of potential collaborators increase tremendously in the last ten years in schools. Similarly their perspective stretching over a longer period of time will have seen how a subject has changed, the introduction of technology and its increasing use by teachers and students. Younger members of staff will have grown-up and been teacher trained with technology as an assumed part of their culture. Experience of the Personalised, Learning and Thinking Skills curriculum and Musical Futures pedagogy may prove relevant because it includes a focus on inquiry learning. This audit proved to be a valuable evaluation exercise for reviewing the work of the library, although inclusion in a particular category is not an indicator as to the quality of that experience, simply a measure of participation.

A further analysis was made of all those who have strong collaboration experience with the librarian using a four box grid to identify whether this was related to information literacy or for other reasons (Appendix Thirteen). This also proved a useful evaluation illustrating that a third of the staff has strong collaboration links with the librarian. For the purpose of this research, it identified strong information literacy collaborators, so that some could be invited to participate. A cross-section of staff was identified as an ideal sample and of these twelve was interviewed:

Teacher	Subject	Information Literacy	Collaboration	Relevant Characteristics
A	History	Weak	Weak	NQT
B	Science	Strong	Strong	
C	Religious Education	Strong	Strong	Advanced Skills Teacher
D	Mathematics	Weak	Weak	
E	Art	Weak	Weak	Head of Dept.
F	History	Strong	Strong	
G	English	Strong	Strong	Advanced Skills Teacher
H	Music	Strong	Strong	
J	I.C.T.	Weak	Weak	
K	Drama	Weak	Weak	Head of Dept.
L	Science	Strong	Strong	Asst. Dep. Head
M	Design & Technology	Weak	Strong	Head of Dept.
Y	Religious Education	Strong	Strong	Pilot
Z	English	Weak	Weak	Pilot

Figure 3.1 Sample Range (Pilots in blue)

The sample was highly selective and engineered to provide a cross-section of experience and it is comprised of staff who were willing to give their time and articulate their beliefs and opinions. These characteristics might mean those who are more sympathetic to the library are in the sample but there have been clear steps to ensure a cross-section. Some subjects are not represented: Geography, Economics, Physical Education and Dance, in part because of departmental politics but this is also a reflection of the limited time available.

3.1.1.4 Interview Process

The design of the interview schedule (contained in Appendix Ten) was semi-structured in style. The interviews all took place in the teacher's classroom or office to ensure they felt as comfortable as possible. With the teacher's permission the interviews were taped and transcriptions were made and stored off-site so that the data could be kept secure and confidential. When transcriptions were complete they were returned to the interviewees so that they could make any changes, deletions or clarifications that they thought were needed.

As a participant researcher with insider knowledge of the institution and of the interviewees that could potentially affect my expectations and responses I took steps to examine these in relation

to each interview. I made notes, before and after the interviews to record my thoughts of what was likely and what I hoped would be revealed. In the post-interview notes I recorded the subsequent differences and surprises that I encountered to ensure good research practice (Gillham 2005, p.9). This was helpful in opening my mind to hear the things that I did not expect, rather than simply the items, which would resonate with my own thoughts. One could not help but be aware of one's relationship with the person and of the constraints exerted by the micro-politics of the setting:

‘Neither we nor the subjects we seek to understand are blank social slates; we are embedded within particular biographies and communities from which we take our identities.’
(Nixon, Walker and Clough 2003, p.102)

One participant in her third year of teaching, normally confident and friendly during our daily interactions, became very nervous and checked whether she was answering the questions correctly. The danger here is of reciprocity taking place as a result of the researcher being known to the interviewee (Hitchcock and Hughes 1989 p.164). This is where certain answers are given in the assumption they will be helpful to the interviewer and this may reduce the validity of their content. In the interview I could only respond with supportive prompts to show my interest lay in her answers whatever they might be. Overall I have attempted to reduce this bias by making it clear to the teachers that they can exert control over their transcript in the form of anonymity and the opportunity to read over and make changes, deletions or clarifications.

Interviews with teachers with whom I have collaborated closely, tended to be longer and I have made fewer of my own comments during their sessions, staying close to the schedule of questions. Where the participant needed more reassurance from me, I have interacted in a more conversational way with them, as a way of acknowledging our mutual relationship and to increase their level of security and comfort. There were times when participating in the relationship with them as a colleague rather than as a researcher had to be a priority, they were and continue to be my colleagues and that is so much more than a data provider for a researcher (Fielding 2000). Sometimes an emotional response was clearly being asked for and to hold back would have underlined the artificial nature of the experience. As a participant researcher I brought to their answers my in-depth understanding of the setting and its culture in which we both work and this adds context to their responses. As Stenhouse says ‘we are concerned with the development of a sensitive and self-critical subjective perspective and not with an aspiration towards an unattainable objectivity.’ (Stenhouse 1975, p. 157). What I found to be true throughout was that my relationship with the person formed the canvas beneath the words of the session. This reflects one of the advantages of being a participant researcher, rather than an external figure, in that rapport was already established and an understanding of the context frames the exchange.

The interview process gave me much to reflect on, with insights into the perspectives of colleagues and quickly affected the way that I am able to work with them. Personal reflection on my professional practice came from how the interviews changed my understandings of my role as librarian (MacFarlane 2009, p.125). This experience has made me value the process of research preparation more deeply, with the understanding that this gives a greater ability, to deal with what arises in an interview experience. I need to not only consider my expectations, before and after interviews, but those of the participant too. So that I can reflect on the social and political context in which we both stand in a much more explicit way and to consider how this affects our perceptions and the way we characterise them. Access to that level of knowledge is one of the strengths of being a participant researcher.

3.1.1.5 Data Analysis

The interview data was analysed through several layers of processing:

- The post-interview notes were made as soon as possible after the end of the interview to record reflections.
- The tapes were listened to in order to re-visit the experience.
- Transcription involved an examination of the interview contents. Transcripts were assigned an alphabet letter beginning with A, in order of participation, to ensure anonymity.
- The transcriptions were shared with each teacher and there were no requests made for changes or deletions.
- A transcript was shared with the Learning Resources Action Research Group (Appendix Fourteen) and this helped me to stand back from the data and see it from the perspectives of fellow librarians, all operating in very different school contexts. This collaboration was a form of ‘interpretative zone’ (Wasser and Bressler 1996 in Ely et al 1997 p. 272) because through discussion of my new understandings it enabled me to move from monocular to binocular vision. The contradictions in the transcript were discussed and initially I felt the fault might be mine as interviewer, but as different layers of analysis have taken place, I feel this to be reflective of the ‘objective contradictions of the world he lives in.’ (Kvale 1983 p.177). The teacher identified a problem but did not address it in practice and as the analysis shows there may have been cultural reasons for not doing so.
- Substantive statements were identified in the transcripts in relation to the four research questions regarding: information literacy concepts, pedagogy, collaboration and librarian role.

- The process of evolving category labels was influenced by the procedures recommended by Gillham (2005).
- Three excel spread sheets were created and these were divided into three areas reflecting the structure of the interview schedule for manageability:
 - Defining information literacy and descriptions of teaching
 - Impact of technology and changes in information literacy skills
 - Collaboration experiences and the role of the librarian.

The following tables provide a guide to the categories used, the nature of their content and how they were derived.

Category	Derived from	Notes on character of statement
Domain specific definition	data	subject interpretation of information literacy
Search	both the data and the literature	description of teaching
Task relevance	both the data and the literature	description of teaching
Domain specific skill/language	data	description of teaching
Synthesis	literature	in relation to pedagogy
Transfer	both the data and the literature	in relation to pedagogy
Application	data	student use of the skill
Articulates understanding	data	specific statement answering the research question
Reflection	literature	by student
Evaluation	data	of their teaching or use of assessment pedagogy
Thinking	literature	by student
Unique	data	not specific to research question, an insight not mentioned by anyone else
Authentic/Relate to	both the data and the literature	need for authenticity in learning experience to better enable the student to relate to it.
Strategies/tools	literature	in relation to pedagogy
Control/Cognitive authority	Both the data and the literature	awareness of this issue
Metacognition	literature	observation of student metacognition
Problems	data	in relation to pedagogy
Librarian Role	both the data and the literature	Experienced by teacher

Table 3.2 Spread sheet one: defining information literacy and descriptions of teaching

Category	Derived from	Notes on character of statement
Domain specific skill	data	description of use
Advantage for teacher	data	experienced by teacher
Advantage for student	data	experienced by teacher
Change in skill/learning	both the data and the literature	viewpoint
Control/Cognitive authority	both the data and the literature	awareness of this issue
New strategies found	data	in relation to pedagogy
Transfer	both the data and the literature	in relation to pedagogy
Ways forward	data	viewpoint
Problems	data	experienced by teacher
Unique	data	not specific to research question, an insight not mentioned by anyone else

Table 3.3 Spread sheet two: impact of technology and changes in information literacy skills

Category	Derived from	Notes on character of statement
Experiences	data	description of collaboration
Domain specific	data	description of teaching
Strategies	data	description of collaboration
Impact on student	data	experienced by teacher
Evaluation	data	of collaboration
Transfer	both the data and the literature	Student learning transfer experienced by teacher
Ways forward	data	viewpoint
Problems	data	experienced by teacher
Unique	data	not specific to research question, an insight not mentioned by anyone else

Table 3.4 Spread sheet three: collaboration experiences and the role of the librarian.

- Statements from each transcript were mapped to categories on the spread sheets for analysis of conceptualisations to discern level of coherence or fragmentation in views.
- All the transcripts were read through in order to discern common issues and diversity of viewpoints and experiences.
- The four research sub-questions were assigned a colour and statements in the three spread sheets were highlighted accordingly to collate statements together in relation to each question (Appendix Fifteen).

Each stage has provided matter for reflection, the literature study, the data analysis and the writing process. It is in the writing process, where much of my learning, from this research has

crystallised. As drafting of Chapter Four began and was critiqued, this evolved into a presentation of data, then separately discussed in Chapter Five in relation to the research questions. The data has been presented in the form of three selected voices in Chapter four to illustrate the diverse nature of the teachers' perspectives. All twelve are diverse and have value, but constraints of word limit has required three voices to be selected and the remaining nine represented jointly in a subsequent section to emphasize points of comparison and contrast.

Each time material or writing is shared with action research group colleagues mentioned earlier, or with doctoral supervisors it causes new perspectives to emerge, provoking me to question my assumptions. The ethics of research inspire one to think carefully about how one's interviewees and their data should be respected (Macfarlane 2009 p.77; BERA 2004) but the role that bias plays in the writing process can be subtle. On occasion I have found my assumptions written into the text and have identified the effect this can have of erroneously conflating pieces of data. The reflexive nature of responding to critique, re-drafting, re-visiting the data takes on a spiral movement across the different chapters to review and re-write them. Inherent in this process is re-conceptualisation, first in understanding and second in articulation. Bias is inevitable, it can create serious weaknesses but finding it can give thinking strength.

This is captured in this work:

‘we understand bias to encompass our pre-conceptions, assumptions, passionate inclinations, aversions, all the experiences and learning we bring to a scene. Some of these go unrecognized and prevent us – by rendering us blunt and clumsy cutting shares – from doing justice to our material. Some of these are recognized and act as energizers, facilitators in shaping our material just so.’
(Ely et al 1997 p.347)

Analysis of this data has taken an inductive approach to draw out the inferences from an analysis of the data and in relation to the literature on this subject. It could be argued that this approach may impose some limitations on reliability but care was taken during the design of the research to support this aspect. I ensured that the range of staff interviewed were, both with and without, experience of working with myself as librarian. The range of teachers was carefully engineered to provide a cross-section of viewpoints. Once transcripts were produced these were then shared with respondents to enhance the validity of the outcomes. An anonymised transcript was also shared with colleagues in the Learning Resources Action Research Group for discussion of issues potentially emerging from the data.

From both an ethical perspective and from a duty of care for my colleagues I reassured them that the interviews were confidential, the data would be made anonymous and stored carefully off-site. The content of the interviews was not ethically sensitive but more in the style of a

professional conversation that could easily have taken place in the company of other colleagues. In addition they were given control of their transcripts with the opportunity to edit as they saw fit in the knowledge that material from the document could potentially be published. The Head Teacher gave permission for the research to take place and is aware that work will be published.

I hope that the data and its analysis will be informative and provide some illumination for others working on information literacy in a secondary school context. It is some time since research on this specific context has been carried out and at this level by a practitioner librarian.

The data is presented in the next chapter and this will be followed by a discussion of the findings in Chapter Five.

4 Chapter Four

4.1 Presentation of the Data

This chapter will present the data that has been collected from interviews with twelve teachers. It is not possible to relay the entire collection and so three voices have been selected for closer attention, because their data together, provides a rich and diverse picture of the perceptions of information literacy and of the role of the librarian. The data is diverse in perspective and content because these teachers not only teach different subjects, are at different ages and have varying experience levels, but they also have very separate views of the topics contained in the research questions:

1. What does it mean to be information literate and is it changing in the new technological age?
2. How can librarians and teachers work together to raise information literacy levels?
3. What is the role of the librarian in raising information literacy in the school for both teachers and students?
4. What is the understanding among teachers of the importance of information literacy and of the role librarians can perform in the teaching and learning of this subject?

The final section of chapter four will show data from the remaining nine teachers that illustrate further diversities of perspective or insights that help to enrich the picture of information literacy practice in this secondary school setting.

4.1.1 Selected Respondents

There follows a description of the three selected teachers to frame an understanding of their contribution.

Teacher A

Teacher A is in her twenties at the beginning of her teaching career. This interview is taking place in the summer term near to the end of her first year of teaching and she has almost completed the NQT training programme (Newly Qualified Teacher). Teacher A teaches History to classes in Key Stage 3, 4 and 5, meaning that she has worked with students across the entire age range in secondary education. In my analysis to select the sample group for this research, Teacher A was identified as weak in both information literacy and collaboration because we have not yet worked together on a specific project. This is not intended as a reflection of her knowledge or skills, but as a perception of my experience in relation to ensuring a range of voices and experience in the data.

Teacher E

Teacher E is approaching mid-career and has worked in secondary education for more than fifteen years. She is an Art teacher and has recently achieved Head of Art status. In my analysis prior to sampling, I described her as weak in both information literacy and collaboration, although in the longer past we have worked together on such projects, but not in recent times reflecting her promotion and alternative pre-occupations. In a sense this places her mid-way between Teachers A and L in terms of library experience.

Teacher L

Teacher L is an Assistant Deputy Head teacher with particular responsibility for developing teaching and learning and staff in-service training. She has been teaching Science for more than twenty-five years. Teacher L has worked closely with me, both in information literacy tasks and on wider school issues, where she has drawn the librarian role into teaching and learning discussions.

The data from each of these teachers has been sub-divided into the following sections: the meaning of information literacy, the influence of technology, collaboration and the role of the librarian. There is one exception in Teacher E's contribution, where an extra section was created entitled 'Search Skills' in response to the amount of data on this aspect, generated in that interview.

4.1.2 Teacher A

4.1.2.1 The Meaning Of Information Literacy

Initially Teacher A was unsure about the meaning of the term information literacy and accepted the offer of an illustrated text as a guideline (see Appendix Fourteen). On studying this Teacher A commented that information literacy is 'relevant for history' and identified that 'our source work uses a lot of these ideas' and that 'interacting with information is I think quite relevant for Key Stage 4 and 5 in terms of their essay writing'. In relation to search skills she described an exercise 'using images as sources and getting them to extract as much information' before they:

'move from that experience to looking at this other image and imagine they can then hold that in their hands in the same way. Then we give them information about the wider context of where that object was found and then see what information can you now add to your existing knowledge. And we then get them to then construct questions of their own'

Teacher A described an activity which involved activating students' prior knowledge and used a process of inquiry to investigate an object. She described using 'objects that they can relate to

in their everyday life' which shows an injection of authenticity to motivate and engage students in the inquiry. This was followed by an opportunity for the students to produce their own questions for continuing the research.

The students are then given a choice of how 'to present their information in different ways' coupled with evolving their own research questions. This illustrates the locus of control moving from the teacher to the student. Teacher A observed that 'they liked the fact that they were approaching something from quite a different angle from how they usually might do' which indicates that an inquiry process is perhaps not the only, or even the most common approach, used in her classroom.

Teacher A used peer assessment and said this was to help the students 'to understand 'well how do I use the information I've got effectively' and recalled that they commented on each other's work: 'not very good at using the information, you're not very good at answering the question' and that this enabled them to 'find their own weaknesses... using their knowledge.' These assessment comments appear summative and critical in nature and no mention is made of formative comments of how to improve work either from students or herself, the teacher.

In terms of what it means to be information literate, transfer has been identified as a positive characteristic of information literacy skills and this teacher describes her strategy for encouraging transfer as:

'you go onto a website to find something and they see you doing that [modelling]
I think it helps them to see those as transferable skills'

Teacher A did not say how explicit she makes the possibility of using this skill in more than one context. She makes an important observation:

'I'm kind of torn because on one hand I think cross curricular approaches would really help us to improve these skills... but I don't want them to suddenly think that everything is the same because although the skills are transferable they're not identical and we do want to emphasise different... The importance of one skill in history might far outweigh another.'

Teacher A has clearly perceived that information literacy skills are not generic in practice but when applied in a subject context are complex and dependent upon the circumstances. Working collaboratively in a cross-curricular manner is generally viewed as beneficial for students but clearly this teacher is not convinced this is the only way to look at the issue:

'But everyday life isn't put into boxes and when they leave school they need to be able to be more cross curricular if that's the way we want to look at it'

The last comment provokes the question as to whether we want students to see skills as generic in nature and something they transfer from place to place or if we want them to reach a more sophisticated understanding of how a skill must be adapted in different circumstances.

In brief, Teacher A sees the meaning of information literacy lying within the compass of her subject, relevant to its tasks where the skills when deployed are done so uniquely in comparison to other subjects. Although information handling is included in assessment, there is no overall monitoring of information literacy skill development, possibly because there is no supporting framework available. Learning transfer is recognised as a goal but methods for teaching it are limited and a cross-curricular collaboration is not viewed as a suitable way forward.

4.1.2.2 The Influence of Technology

Teacher A observed a number of advantages that technology had given to teaching and learning in relation to resources and classroom management:

‘given us the opportunity to find a wider variety of sources for students to use’
‘freeing us up from text books is a really good deal in history because I still think it is very text book bound.’

Teacher A observed that the quality of resources had improved and in comparing the textbook with YouTube footage observed a ‘picture in a text book they find quite interesting. But actually watching the live footage, that really sticks with them’. Teacher A identified a further learning advantage:

‘in some respects I think maybe it’s improved their concentration...They wouldn’t sit and listen to someone reading out of a text book but we would sit and watch the clip’

And because there are more varied and better quality sources to draw on she felt they were making better use of them:

‘I think it’s helping them to analyse information better as well, in terms of our subject looking at sources’.

It may be possible that if experience of interacting with primary sources has become more frequent, then this greater level of practice may indeed mean there are higher levels of information literacy, but without formal assessment we cannot be certain.

Technology has ‘freed up time to work with students more effectively’ because ‘PowerPoint slides you can leave instructions and things up on the board and it means I’m not wasting time writing things out’. In a sense the lesson is no less didactic, it is only the means of communication that has changed, but this extra time allows the teacher to

‘check their understanding without having to... leave them floundering while I ‘m writing stuff up.’ And it’s ‘given us more [teaching] opportunities to develop different styles of learning.’

Examples were given:

‘use technology to make presentations to each other... students who quite often didn’t want to say a lot in class or their written work was quite poor suddenly really wanted to communicate with other people’

‘presenting information I got the Year 10’s to make a revision video of themselves rather than making revision notes. They all remember doing that and they enjoyed it.’

So technology is facilitating greater differentiation of outcome, processes and

‘it’s helping definitely with them taking ownership of their learning because it’s providing a wider range of options as to how they learn and so opening up communication’

Teacher A recognises that technology is offering change for pedagogy and an opportunity for students to have greater autonomy over their own learning but the pressure is felt by the teacher to lead the way:

‘It’s just about us to sort of find different ways of developing...[use of the technology]’

When Teacher A was asked directly if it had made a difference to information literacy skills she said:

‘I think it makes them more demanding of teachers and their learning. They kind of expect to be entertained more. They expect a lot more interaction.’

Yet Teacher A felt that:

‘maybe it hasn’t changed it fundamentally. I think there’s still... The way people learn is the way people learn’.

So in this teacher’s view technology has enabled a proliferation of better quality resources and therefore students experience more practical use of their information literacy skills. She feels technology has facilitated greater differentiation in the classroom and enables the locus of control to move to students giving them greater ownership of their learning. Overall Teacher A feels that information literacy skills, or learning, as she refers to it, has not itself changed at a deeper level in response to technology.

4.1.2.3 Collaboration and the Role of the Librarian

Collaboration was examined in order to support thinking about how librarians and teachers can work together and to discover some of the difficulties and possibilities. Teacher A began by talking about her experience of cross-curricular collaboration in school. She suggested there should be time released from the normal timetable so that students could experience cross-curricular work more intensively. The school structures as they currently exist do not lend themselves easily to this way of working:

‘drop down days...makes the links a lot clearer for them...it’s not easy with timetabling and it’s a bigger workload.’

Cross-curricular collaboration assumes that skill transfer will become better understood by students but in practice topic learning rather than skills becomes the focus, particularly if there is insufficient planning time given to staff. Teacher A described a particular collaborative experience that involved History, Drama, R.E. and P.S.H.C.E. which aimed to deepen student understanding of the holocaust, prior to attending a drama performance where they would meet a survivor who would talk and answer their questions:

‘In theory we did collaborative work on the Holocaust here...it was all supposed to be done at one point in time and so we’d all be teaching it simultaneously. But it’s, we’ve actually all ended up teaching it at different points in the year. There’s no kind of agreement on, well what might be the PSHE role here, what might be the historical role?’

Teacher A reflected on the superficial nature of the subject learning achieved by the students as:

‘They learn about the Holocaust, not where did these anti-Semitic ideas come from?’

and because of poor planning:

‘we start at an awkward place and we end at an awkward place and the students are probably left, I feel, with more questions than they are with answers almost’

She suggests that they failed to set a clear outcome for the project in each subject area:

‘[No one asked] what is it ultimately that we want the students to know and who do we think would like to take responsibility for these different parts’

And most critically of all:

‘they seem to think that if we’re all covering that topic then because we’re all looking at [it] then that’s cross-curricular.’

This suggests there is a misconception about what cross-curricular work should look like and that it is not enough to simply highlight to students that the topic is part of more than one subject as if that alone will benefit their learning. Teacher A recognises that cross-curricular collaborations could have a clearer skills focus and uses the Personal, Learning and Thinking Skills (PLTS) framework as an example:

‘[PLTS] can only be covered if you work backwards from the outcome. If you work towards things you quite often end up sort of veering off on a tangent. Students do end up with a lot of content knowledge but not with a lot of skills.’

She suggests a possibility in the following:

‘I’m not really sure if they’ve ever sort of mapped what everyone does...very time consuming’.

Teacher A points out the advantages of greater knowledge of how work is done in other subjects so that a common language could be identified for teachers to use:

‘they’re writing to inform and writing to explain at GCSE...if we knew what it was that they were looking for then if the students were hearing it all the time in different subjects it might help them as well. Because I think we’re expressing the same ideas but we’re not using the same language and that’s quite confusing for them.’

If the relevant terminology was in common use between teachers they would be able to support students in activating their prior knowledge gained in other subjects more effectively. Crucially this teacher identified earlier the importance of understanding how information literacy skills were adapted for specific subject contexts and here she gives an example of what this could look like:

‘With English I would be really interested in working in collaboration on the skills things like persuasive writing. ..speeches... And we can look at their motives and what the outcomes were and we can look at the historical context. But they can then also apply the skills that they’ve learned in English to pick out and explain why that speech matters.’

In order for this dynamic to be successful it has implications for the professional development of teachers because:

‘I sort of know what I’m talking about but I’m not an English teacher and I don’t know all there is to know about persuasive techniques.’

There would need to be substantial support from a school’s leadership team to provide sufficient time for planning and exchange of expertise.

The role of librarian was not automatically referred to as a collaborative colleague by Teacher A which could be, that as a first year teacher, she has yet to experience working directly with the librarian. When asked specifically about the possibility, she identified a role for the librarian as an agent for facilitating this collaborative work across the school and providing INSET with a focus on skills:

‘I think it could be useful to pull those ideas together through the library’

She further identified the role of the library in creating a positive reading culture which provides a good foundation stone to help students access the curriculum:

‘The students are quite keen to talk about reading and because it’s just sort of a part of school life, it’s something the students feel quite comfortable with and that’s not something that I’ve experienced in all the schools that I’ve been at. And students talk about the library in a very positive light here and I think that’s a good thing for us because it makes them less scared...’

In her experience so far, Teacher A has observed the librarian leading on reader development and other INSET issues and so makes the equation, with a role for raising information literacy levels in the same way.

In brief, the implications of this section are that cross-curricular collaborations need to be re-conceptualised by staff. An alternative way forward is suggested in terms of enhancing teachers' knowledge of work done in other subjects so that a common language for skills could be used with students.

4.1.2.4 Summary

Teacher A was unsure at the outset of the interview about the term information literacy and as someone who has recently completed a Post-Graduate Certificate in Education, this suggests, that it is not part of teacher education. As Teacher A explored the meaning of information literacy, through the lens of teaching and learning in history, her understanding of it merged with the concept of learning itself. Though some aspects of this have been affected by the use of technology, Teacher A did not feel that how students learn has fundamentally changed. In her view the skills of information literacy needed to be understood and seen as contingent upon the context in which they are used. Overall she felt collaborative work needed a clear focus from the outset and this could be designed with information literacy skills as the focus and a lead could be given in this work by the librarian.

4.1.3 Teacher E

4.1.3.1 The Meaning Of Information Literacy

Teacher E was not familiar with the term information literacy and so examined the illustrated text (Appendix Fourteen) and summarised it as:

‘So it’s sort of a process with this... initial interacting with the information would be what we’re trying to teach, you’re trying to teach kids how to, we’re all trying to teach kids how to extract information? Then how they’re going to connect it up? And then how they’re going to use it?’

Teacher E acknowledges the librarian’s role of teaching students how to find the information, followed by recognition of what everyone is trying to do in this area. Then she began to describe the information literacy process when in the Art classroom:

‘obviously interacting with artists so in terms of, not so much in terms of initial research... they’re looking at a piece of work and looking at how it might be, that they’re just extracting.’

When Teacher E referred to ‘initial research’ she meant that their process does not begin with formal research to find out about an artist, but by looking at one of their art works, so the information they are extracting is their own response to it. At this point the teacher might ask them to think of a word to feedback with, to her or the group: ‘It would be an emotional response. Or they might have a word that might be an art term that could be a landscape’

This can be followed up by looking up the artist in a book ‘they’d just extract from that book the date it was made.’ They might also gather some information relating to the artist and the medium in which the work was made. Teacher E said that then there are two ways for the students, they can think about ‘the context and the historical context and where the artist was working’ and ‘they can also develop the media and work practically’. She described how she observed their development when they link:

‘up words and responses to that work and in that way they can then start to interpret their own work and develop some kind of way of speaking about their work.’

So for Teacher E being information literate in the art classroom means looking at an artwork, articulating a response to it and feeding this back into their own art work to develop it further. A synthesis takes place between experience and information in order to create their own response.

When Teacher E was asked to describe an example of developing the information literacy skills, she described a visit to an art gallery with sixth formers and because her priority was for them to engage on a personal level with the work displayed she instructed them not to read any of the guide information. This was compared to more formal research:

‘so not in the same way as you’d have them looking at the information in a book because quite often you go straight to the text don’t you and I suppose I’m interested in not going straight to the text because we’re visual.’

This is interesting as it shows how differently the search skill can be interpreted in a subject context. It also makes me realise that I too am teaching this skill in a way that is explicitly shaped by the context of the library and that the teacher has made a judgement about the relevance of this practice in relation to her priorities.

The students were given two post-it notes, on one they recorded a word for their initial response to the work and then on the other, a word to link from that to their own work:

‘they could make a landscape type connection to it and maybe if they work in natural or in landscape where they could interpret it like that.’

Teacher E explained why she felt it was important that they did not rely on the written guide to the art work because:

‘the information, it dictates our responses and our connections’

and she wanted them to learn to develop and trust their own responses first. In addition, she felt looking at the information first would restrict participation for those students who culturally or for language reasons, would not be able to put it into context.

In brief, information literacy in the art classroom is seen as uniquely different from how these skills might be used in other contexts, such as the library. A student’s experience begins with their personal response to stimuli, whereas formal search and synthesis is a secondary process. The priority of the subject is its approach to creativity and this shapes how information skills are utilised.

4.1.3.2 The Influence of Technology

How technology has affected teaching and learning and subsequently, the information literacy in this secondary school was examined next and Teacher E made the observation, that they were influenced by its use in the wider art world:

‘technology is used in the contemporary art world a lot so we use, obviously making videos and making film and making installation type work, lighting, soundscapes...’

But Teacher E did not see the internet as a great provider of resources in the same way that many of the other teachers have done, instead she believed showing them the real object was the best experience. She was particularly interested in the difference technology could make to the process of creating and in giving more ways for students to express their vision:

‘visualisers in our classroom are fantastic. Obviously animation, movie-making, that’s completely transformed, we can do those things so much easier,... interactive whiteboards... the kids have used the little tablets... put an image on the computer, put it up on the whiteboard and they can work directly on top of it...’

‘they can show the way they see, the way they interpret the world, visually through photography’

So, in what it means to be information literate in the art classroom, must be added, the technical skills of operating these resources coupled with the ability to select methods and initiate their use for creation.

Teacher E also mentioned that technology had changed the way the teachers mark work and record information about students, so it has also added to the repertoire of the teacher’s own information literacy skills too. In terms of how technology may have changed the way students learn and their use of information literacy, Teacher E spoke about their response to art which used technology to communicate and said:

‘You think because they’re so visual they’ve been exposed to film and tv all the time, that they’re going to be able to respond to it... you have to teach something about that and they can switch and then they can start to use it...’

So it would appear that when the skill of how to interpret visually is made explicit to them they can begin to use it in relation to the task. This means that even though these children are users of technology in their own lives the teacher cannot assume upon their levels of knowledge or skill. It is possible that the image of this generation as ‘visual’ means little outside of their own context of games playing and only re-enforces the view that skills need to be tailored to meet the context of the subject and therefore have to be taught as such.

4.1.3.3 Search Skills

When setting homework Teacher E sends them away to ‘research an artist and find images’ and comments:

‘It’s not great research at all and they quite often print something off that isn’t by the artist but is somebody else’s interpretation.’

In contrast to examples given by other teachers, who spoke of giving the resources to the children in the lesson to ensure the activity was adequately resourced, Teacher E has set a search task for the students to complete. Unfortunately she has not modelled how to search for such information and consequently the outcome is of poor quality. In exploring why she gave very little guidance on how to search, Teacher E compared it to demonstrating a drawing technique:

‘I want to show them technique but I don’t want them to recreate what I do. I want them to go off and see what they discover. So I think you have to trust them as well because we try to direct or control don’t we?’

Indeed different teachers will have a view as to how much of the drawing technique in that instance should be demonstrated. Throughout the process of teaching students to draw, a teacher will introduce different approaches and strategies for the student to try, to see how this affects the development of their own hand. There is an intellectual process involved, judgements and interventions are made. In the same way the act of search is an intellectual process and an absence of teaching in how to do it, to develop one’s understanding of the complexities involved, suggests it is either misunderstood or under-estimated by the teacher. As a process, perhaps it is not identified as relevant to the learning of a subject, because it is not relevant to the passing of an exam in the secondary school context.

Teacher E suggests the students’ search skills were poor because:

‘they can’t necessarily do that quickly because they haven’t got the wits. I just think it’s their age and they haven’t got the understanding yet.’

Then Teacher E began to consider if you were to teach search:

‘a lot of them are just not mature enough to do so they’ll probably be doing some of them naturally but thinking about teaching, I suppose it’s how we question and interact with what they’ve collected or how they’ve drawn that information out...’

This identifies dialogue and questioning as useful strategies in helping students to make sense of their experience and increase their understanding of it. At this point, Teacher E refers back to the illustrated guide for information literacy shown at the beginning of the interview, equating the diagram’s information literacy process with the imposition of structure:

‘The thing about that imposing structure, we impose that structure in school and in the national curriculum... it’s good in one way because it does give you something to have a process on... But not everybody works like that and not everybody thinks like that. It’s very sequential. One of the boys in my Year 10, could go straight to a final piece. But because of the national curriculum structure and this way of thinking interactively they have to go backwards... and it’s very boring.’

She recognises structures are useful for assessment purposes and that some students need such support, but feels the research process should be:

‘I now think it needs to be more of a fluid... a circle of eight? and it’s much more back and forth, interweaving, it’s going forwards, coming back a bit.’

Teacher E seems to be interpreting the information literacy text as a formal structure whose imposition would not be welcome. She compared it to the sketchbook, criticising its linear nature as an imposed structure that did not suit all learners making it harder for them to make connections between ideas and works. She concluded her thoughts on the illustrated text as:

‘The person who’s done this has imposed their thinking obviously it’s their thinking and their connecting.’

A judgement is being made by the teacher, framed by her secondary school context, about the relevance to her of this description of information literacy. This indicates the dissonance that is experienced when viewing expressions of what it means to be information literate which have been created for contexts other than one’s own.

Teacher E also made the point that the school structures have to be imposed for the purpose of control and this affected our approach to research:

‘We like to contain don’t we the mess somehow and maybe we like to do that with researching? We don’t want them going off in to the internet and getting any old stuff do we? It’s a bit scary. We haven’t got control over it.’

Control is part of the socio-cultural framework in a secondary school where practices are affected by curriculum and exam targets to be attained within particular time constraints. It is

unrealistic in this setting to yearn for a completely student-centred experience, but perhaps this is part of why this teacher sets research homework without guidance.

4.1.3.4 Collaboration and the Role of the Librarian

Teacher E was asked to comment on her experience of collaborative work with other school colleagues and described the close working relations within her department. When asked if that type of collaboration would work with a school librarian she immediately identified the librarian's role with the teaching of research:

‘we have brought boys over haven't we and getting them to understand how they can research art and reference their work’

She expressed the concern:

‘that you're not trying to get them to research your subject in isolation that actually what you're trying to get them to understand it is part of everything.’

The difficulty is that:

‘they do not transfer their skills, their learning skills, but they don't transfer their knowledge.’

The teacher is referring to how students seemingly fail to remember how to do something once they move to a different subject classroom. This appears to be a view of skills in a generic sense rather than as a tailored practice within each subject, contrasting with the previous teacher's opinion.

Teacher E observes that the barriers to learning transfer might be the student's age, their maturation process, emotional situation and a degree of information overload in the school culture. Therefore:

‘all we can do is start the process up and not worry that they don't quite get the whole picture.’

She reasoned they do not all make progress at the same speed. Although not explicitly commenting on the need to tailor teaching of a skill to the subject in which it will be used, Teacher E recognises that one cannot transfer a lesson plan from one teacher to another:

‘You pick what fits and adapt it. I mean... nobody's lesson really fits for you.’

Yet this thinking is not then applied to the students and their learning and use of skills too.

In thinking about the library, Teacher E comments on experiencing a different learning environment with the students:

‘we tend to operate a certain way in the classroom... by changing the space it does have an effect. ...maybe that’s the problem when they can’t transfer skills because they learn in this very funny, isolated way. ...they think differently in different places’

This may well be the case but it is a somewhat passive acceptance of the status quo when a more active strategy for skill awareness and transfer could be pursued. This could also be a reflection of how little is known about learning transfer pedagogy.

4.1.3.5 Summary

Teacher E was unfamiliar with information literacy at the outset but then articulated very clearly the process of how information is interacted with in the art classroom identifying the personal response to artworks as the priority. She identified the students’ lack of visual literacy and that this skill needs to be taught. Teacher E does not teach search skills leaving the outcome of research homework to serendipity because she identifies this as yet another school imposed structure that would inhibit freedom. She critiques the illustrated guide as lacking relevancy in its information literacy descriptions for her subject context. Teacher E recognises that when she transfers her learning it needs to be adapted but does not make this link to the student learning of skills. When Teacher E does consider the issue of transfer she mentions reasons for why it does not happen but fails to identify a role for teaching in response to the phenomenon.

4.1.4 Teacher L

4.1.4.1 The Meaning Of Information Literacy

Teacher L immediately defined what it means to be information literate as:

‘the ability of students to look at information in a range of formats, text, tables and graphs and to construct meaning from those texts, real meaning from that to be able to process it and extract what they mean and to really understand, to construct meaning.’

The teacher specifically mentions the sources of data that are used in her subject, Science, to generate observations and questions. When teaching students how to do this she thinks:

‘aloud for them the processes that I would go through in order to extract meaning from it.’

Modelling is one of her key strategies. Teacher L feels that:

‘we forget they don’t necessarily have the skills or the resilience to think about information, and to think about how they are going to work it through, how to be about extracting what it means and that puts lots of learners off I think, they haven’t got a way in.’

At this point she mentions the work that she has done in collaboration with me as another example of developing information literacy skills with her students:

‘the ways you have of particularly, to look for specific things to make meaning’

The teacher identifies the skill of finding and selecting relevant information from the library experience, suggesting this part of the work resonated with her priorities. She then mentions the lack of time for teaching information literacy and some aspects of ‘active learning’ and the ‘Personal, Learning and Thinking Skills’ as problematic so her approach is:

‘where they are taking responsibility and really getting immersed, but I think you can use active learning and constructing meaning on the spot.’

She gave an example of this, where she gave her students a series of images on PowerPoint and asked each of them to create the script for one, by selecting the matching text in their textbook and to complete the task within ten minutes:

‘I said you have to be ready to come in when your slide comes up and actually they really enjoyed that, it really deepened their understanding’.

The aim was to get them ‘active’ and to ‘get them thinking’. Teacher L feels very constrained by the amount of curriculum content that must be covered and feels this is in opposition to time spent teaching skills.

4.1.4.2 The Influence of Technology

Teacher L feels ambivalent about ‘the spectre’ of the internet:

‘I can remember something you did years ago about the veracity of websites... far more resources available, but I think that the selection process is difficult and finding the right websites to use.’

‘I suppose it has affected the way they can present, I don’t do it a lot, although I have done it, presenting by PowerPoint is something they enjoy.’

The increase in technology presents challenges for the information literacy skills of the teacher too and this may be affecting the extent to which it is then exploited with students:

‘I am very limited in the way I use the whiteboard, I use it as a non-interactive whiteboard, I’ve never had... time to really learn and that frustrates me a lot.’

Although it is not used as a learning tool by the students, the whiteboard is contributing as a teaching tool:

‘I have broken the learning outcomes down into much smaller ones...because it is much faster to type them, which means I can refer back to them much more... I am using learning outcomes and learning objectives much more effectively with students and they can focus more’

Like Teacher E, Teacher L is experiencing changes in what it means for her to be information literate through technology, the increases in information resources and educational initiatives like the Personal, Learning and Thinking Skills programme. She has observed changes in student behaviours towards information, in common with Teacher A:

Teacher L recognises:

‘I think they expect more in terms of visual stuff’ and using power points ‘has added a dimension in terms of visual appeal’.

However Teacher L also observes:

‘I think they often need to hold things physically... If I had a choice between spending time on cutting out organ shapes in card, which they can tape to themselves in places where they think they are, or doing an interactive whiteboard thing it would be cards every time.’

This activity involves a synthesis of information in order to complete and perhaps this teacher is under-estimating how much information literacy is a part of the learning experience because her definition seems to be restricted to secondary information sources. Teacher L is clear that technology is a tool and should only be used with a clear educational objective in mind:

‘it’s making sure the technology is not used for technology’s sake and there is a purpose to it... whether you are just doing it for assessment, or just doing it to look good.’

When asked if technology had affected information literacy, Teacher L commented ‘strangely I don’t think it has done anything for information literacy.’ She felt that one had to acquire more effective skills when books were used as the main source of information, because they were not user-friendly, but they were all that was available at that time. Whereas now ‘often see kids on the most ridiculous websites that will not answer the question’. At this point she refers to learning to search as ‘acquiring a skill of looking quickly for what you need, discarding quickly stuff that is of no use.’ This narrow definition would seem to reflect the functional aspect of search in a lesson where completing the task in the time available is the target. It is seen as a physical, time-consuming task where the intellectual aspect receives little acknowledgement.

4.1.4.3 Collaboration and the Role of the Librarian

One way forward, identified for information literacy by Teacher L, is including skills teaching in schemes of work and teacher in-service training days. She referred to the Wicked Science schemes and said ‘it has a massive amount of information on data interpretation for example, which is a form of information literacy isn’t it?’ This seems to show, that although Teacher L is aware of information literacy and has a view of what it looks like when she focusses on formal

information sources, unlike some of the other teachers, she may not link it to a wider view of learning.

Teacher L further comments:

‘it relies on middle leaders, second-in-charges and ASTs, people of influence to ensure that information literacy which all comes under the banner of engagement and active learning, study skills, ensuring that the very deliberate teaching of those skills’

This reflects her leadership view of how to implement a change of practice in a school and is evidence of how separately she views initiatives focussing on skills from subject teaching. She referred to an example of work that we had done previously which involved library-based projects being embedded into the Science scheme of work:

‘that’s what we do in Year 9, it’s all about information literacy, you use that term and we do this in the library with [librarian’s name] and we do this in Year 8 with [librarian’s name]... I think teaching those skills is incredibly hard work.’

Information literacy appears to be identified very strongly with the Library and more formal research processes using secondary sources of information, and is, perhaps, quite separate from learning that takes place in the classroom or laboratory which can involve all of a student’s senses and therefore all types of data. Inclusion in a scheme of work is useful in creating awareness of it as a topic but is no guarantee of how far it will be taught or assessed by a teacher.

Teacher L described the library as an attractive and stimulating environment for the students and saw this as necessary if it was to fulfil its role in promoting independent learning:

‘where are the pupils going to go when they want information. They are going to go to the school library, it’s not just the work the librarian does with staff but what he or she does with the individual learners to improve their literacy skills but by being there in the library, by being helpful, by saying look you need to do this...’

In order to support this librarian role, Teacher L saw her part as a member of the leadership team to ensure that the librarian is included in whole-school planning and that staff are aware of what the librarian can offer them. She observed there is a lot more work to do on the information literacy side and in ‘any curriculum review you need to be a part of’ to ensure its inclusion. Teacher L then commented on the pedagogical contribution of the librarian’s role:

‘...what you have brought is the practical techniques for doing that and the time and energy, it’s real luxury to find another member of staff and you can actually go to and say I don’t know how to do this and you say yes, you can do it here and this is how...’

In order for the librarian to be a source of support in this way for teachers, it is necessary for them to maintain their own professional development and add to their educational knowledge and repertoire. The librarian can support the individual teacher as described by Teacher L, but she also recognised the wider contribution that the role can make to staff professional development too:

‘you have spoken about information literacy and on related aspects of your work which of course reaches people even if they are not doing much with it at the time, it makes them aware and a few would have come back... percolating away in people’s brains...’

Teacher L understands that sharing knowledge and ideas with staff for them to consider is an important part of the change process in a school. It is evident that such communication is a two-way exchange and when the ‘few’ do come back, listening and learning from them is also part of the librarian’s role, so that our understanding of pedagogy can evolve.

4.1.4.4 Summary

Teacher L was familiar with the term information literacy and appeared to define it in relation to formal secondary information sources, particularly at the point of need when interpreting them for scientific questioning. Information literacy was also strongly identified with the work of the Library and that the teaching of it specifically needed to happen when directed by the scheme of work. New technologies and the profusion of information sources has evidently felt quite challenging for this teacher’s own information literacy skills. This may be identifying further potential work that a librarian could undertake to support staff in this area. The Library role was recognised by Teacher L for supporting students to become more independent as learners by providing information sources other than the textbook and for its support of teachers’ professional development.

4.1.5 Overall Summary for the Selected Respondents

Each teacher defined information literacy quite differently, two of them seeing its practice as uniquely different within their subject. Teacher A viewed it through the tasks and skills of inquiry work in history. Teacher E views information literacy in art, as an experience that begins with a personal response to external stimuli, followed by more formal research and synthesis but where serendipity is a strong component. Teacher L identified information literacy with formal research using secondary sources of information dividing that from other learning activities in the science laboratory.

In evaluating the impact of technology on these skills, Teacher A felt the nature of learning itself had not been changed but saw the profusion of resources as beneficial in encouraging

greater concentration and an increase in information handling experiences. Teacher E identified that the presence of technology in the lives of her students did not mean that they possessed the corresponding skills e.g. visual literacy and that these needed to be taught. Teacher L did not view technology as beneficial to information literacy but as a source of further challenges in terms of poor quality resources which were too easily available to students. All indicated the increase in technology had implications for both their own and their students' skill development.

All three recognised the role of librarian as offering value for staff development, as a support for students and providing information literacy sessions.

4.1.6 Nine Teachers

Teachers A, E and L were chosen for the diverse nature of their views to represent the range of interests and viewpoints expressed in the data. They work in different subjects from each other and are at varying points in their teaching careers. It has been interesting to examine the data from the other nine teachers to identify viewpoints which diverge further from those already expressed and where there is greatest resonance of opinion amongst them. Most importantly the data that has been selected adds detail to the picture of teaching practice and tells us more about how information literacy is viewed by teachers.

4.1.6.1 The Meaning of Information Literacy

Most of the teachers did not feel familiar with the term information literacy and accepted the offer of an illustrated text to assist them (see Appendix Fourteen). Some began by mentioning generic items from this text but most then talked about these skills in terms of their own subject. They selected items that were relevant and explained what this looked like in their subject: 'so they know the word, then they do it, then they put it into their own piece of music' (Teacher H). All, but one, of the remaining nine teachers expressed their understanding of information literacy by describing skills and processes that were implicit to learning in their subject. The contrasting voice was that of Teacher B whose views resonated most with those of Teacher L and interestingly, both are Science teachers. Teacher B described information literacy only in terms of selecting information from the internet:

'I think they can Google and find lots of stuff but it's the actual kind of looking for relevant information, choosing the relevant information and really relating it to what they're meant to be doing.'

Like Teacher L, she focusses on how they find and use secondary sources of information as the focus for these skills. Her description of teaching to address these skills involved giving:

‘a grid, the question is in the middle and I’ve put boxes all around with questions and actually also pointing them to the website I want them to research...’

This does not address search skills as an intellectual process where difficulties need to be examined and judgements made. The initial search has been made by the teacher and the pathway to the answers is controlled by her. In essence a matching exercise has been given to these Year 10 students and it requires only a low level of information literacy to complete.

It is not possible to draw a firm conclusion based on the perspectives of just two science teachers but I might suggest that ‘information’ is identified with secondary sources because ‘data’ is linked to primary sources such as classroom experiments. The wider process of learning is seen as separate from information literacy which is identified with published ‘information’.

Teacher B was not alone in describing work where the information source is provided by the teacher, ten out of the twelve teachers, described their practice in this way. This means that the experience of searching for an information source by the student is mainly absent, all the decisions about what appropriate keywords, accuracy and what should be retained or discarded have been done by the teacher. In Teacher L’s data the reason given is the lack of available curriculum time when courses are content heavy.

4.1.6.2 Information Literacy in the Classroom

The majority of teachers described information literacy as implicit to the skills and processes of their respective subjects:

‘how you use it determines how you solve a maths problem’ (Teacher D)

‘all the different ways of interacting with information, critical thinking, questioning, challenging, transforming, evaluating, everything that is done structurally that is all the aspects of what I do especially as an English teacher...PSHCE... they have to explore it, connect to it, decide what they need to take out of it... where does it come from... what are the meanings for me, how does it link and then whatever task.’ (Teacher G)

‘Computing is a very logical process. ...process of constructing, from planning to progress, to actually envisioning the end product’ (Teacher J)

One of Teacher D’s main strategies is to generate discussion between students:

‘and argue all their points. Why do you think your concept is better or your way of doing it is better than theirs?... the class tends to be noisy...because the ownership is them not you.’

‘It’s not just mathematical knowledge, you’re broadening their self-confidence skills and communication...’

This teacher takes a holistic approach to the teaching of his subject by setting outcomes for students that go beyond subject content and this involves moving the locus of control for the content and the process from himself to them. An example of teaching given by Teacher G which focussed on developing information literacy skills meant the students became the teachers:

‘I modelled for them the sorts of things that a teacher has to go through. I said the first thing a teacher has to go through is prepare, they have to understand and they have to have studied... some of them resist because they always expect you to lead...all of them said it made me really work hard to understand the poem.’

The modelling took place over several weeks to explicitly examine the process of teaching. Meanwhile outside of lessons the students were engaged in an inquiry process to create their poetry lessons and then the control of the lessons was given over to them completely and ultimately: ‘they understood that they could interact with the information if they had a set of skills and they didn’t need to reach for the teacher...’.

In both of these examples the students are expected to search and research by themselves outside of the lessons and there is no formal teaching of these processes. Both teachers take a holistic approach to their teaching using inquiry processes that means the locus of control and the ownership for the learning moves to the students. Teacher A mentioned inquiry processes but not as a common feature of her practice, but in contrast, Teachers D and G are both mid-career professionals and have more experience and confidence with this way of working.

The next example of teaching which develops information literacy comes from Teacher J, an I.C.T. teacher:

‘the information from us... taking a problem we have set up on Fronter, they then extract what we’re looking for so they save the file. Once they’ve saved it then work on the process... literally do the exercise, put the formula in, or borders and shading... we’re getting an end result immediately...’

The experience is tightly controlled by the teacher, didactic, linear and not open to interpretation by the students. The learning outcomes are focussed on subject content regarding the use of software packages. The teacher and the curriculum represent the information structure and questioning is limited to functional tasks. This definition of information literacy is confined to the boundary of this curriculum’s content. It is quite different from the views of the selected respondents first discussed in this chapter, as it does not focus on the wider picture of learning (Teacher A), the student’s personal response (Teacher E) or interactions with secondary sources (Teacher L). Where tasks are completed outside of the lesson involving search, in common with many of the others, Teacher J does not teach the search process either in terms of mechanics or as an intellectual engagement.

4.1.6.3 The influence of technology

As we have seen from the data of Teacher A, E and L technology has implications for the information literacy of both teachers and students. The management of teaching and learning for registration, record-keeping and academic monitoring has in recent years moved to electronic means and this was emphasized very positively by Teacher K:

‘absolutely revolutionised coursework, is Fronter... they can see what they’ve handed in, there’s no confusion, it’s up there, their parents can see... marking and sending it back that’s been absolutely brilliant.’

Teacher K and Teacher H were both very positive about the way it had enhanced the learning experience in their respective subjects of Drama and Music:

‘increased use of videoing for self and peer evaluation... they can voxpox and interview each other and reflect and it’s so quick...’

‘...it’s just so natural to the kids. They come in, stick their USB in, and listen to their tune, play along with the Musical Futures, we do a lot of that and it’s actually made it very accessible.’

In both of these subjects technology has provided new processes for creation, like those mentioned by Teacher E in the Art classroom and these have been absorbed into their teaching practices.

In addition to affecting this range of processes, technology has made many more information resources available for use in teaching and learning. This requires both students and teachers to be involved in the processes of finding, interpretation and synthesis. For teachers it gives the advantage:

‘you want to teach a topic and I’m not very sure, I can just quickly go on the net and look out to see if any other teacher somewhere, not even in London has done something similar somewhere and how did they approach it’ (Teacher D)

As we saw in Teacher A’s view this has enriched the classroom experience enabling access to many more historical sources which she felt had enhanced their information literacy skills, whereas Teacher L did not think information literacy skills had improved, since the emphasis had moved away from books. Teacher C, based on her work with sixth formers, commented:

‘Laptops waste too much time and they don’t think what they find is of the same quality as what they can find in a book’

Teacher C’s comments are based on supporting students through the search experience, monitoring their reactions and abilities and it is evidence that both critique and evaluation are taking place in their search process. Although Teachers A and L spoke of modelling strategies, they do not place an emphasis on search as an intellectual process and in the main, provide the

source for the students that will be used during the lesson. Teacher C has made the time to teach search processes in some detail and makes both electronic sources and books available for the activity. Teacher C does this with sixth form students and has introduced such experiences for Year 7 students too. But like Teacher L finds that the issue of time in the Key Stage 3 curriculum is a barrier to including search:

‘We’re doing a bit of independent learning in Year 7, but because we only have one week to do it in, one hour in that week, they have a pack given to them. So the research skills aren’t there. The technology skills aren’t there because we haven’t got the time to allow it. So the emphasis of that is going to be on their thinking skills isn’t it? The judgments they make... rather than the finding.’

In relation to using information sources Teacher G and Teacher K commented upon the copy and paste culture:

‘there’s always been a problem, that if you send a child off to research most, maybe 10 or 15% of them will not have actually read what they give you.’
‘cut and paste.. But then I guess maybe in my day I would have copied from the book.’

Copying is a problem if the task is simply to fetch a piece of information, where an activity is set that requires the information found to be synthesised or a judgment made about it, then a higher information literacy skill is invoked. Despite long-term existence of this problem and that technology has made it even easier to copy information, there still seems to be a somewhat passive attitude towards it from teachers. There is generally a continuing absence of teaching for search and an approach to information that is more passive than active in nature. Teacher E viewed this as a choice between control and freedom. At the other end of the spectrum from Teacher E’s viewpoint, sits Teacher J who believes technology gives the teacher the advantage of greater control over student actions. Teacher J would like to see all information sources carefully selected by the teacher and stored on Fronter ‘..yes it’s fantastic but it’s not harnessed enough, not enough control...’ Although copy and paste is discussed as a phenomenon at no point in the data has a teacher made reference to the ethics of information use and shown an awareness of the harm caused by plagiarism.

Teachers have concerns about the use of technology but also see advantages in the way that work can be organised for students through its use and that this can enable greater ownership of learning, as mentioned by Teacher A in the first section. Teacher K voiced a concern about the pressure to use technology that has been made available in schools:

‘...I think it was forcing me to interact with the kids via an external piece of equipment... I always want a whiteboard, a projector... to show clips... but for Drama I’d rather be interacting with each other rather than via a computer. ...about the Globe a fabulous looking program... but why would you not explore that practically?’

This very much resonates with Teacher L's view that one needs to be careful about the choice of when and how to use technology so that it enhances the learning opportunity rather than allowing it to drive the choices. Teacher K also expresses a desire for learning experiences to be authentic, like Teacher E and L, she advocates visiting the real thing or creating an active interaction in the drama studio.

These concerns about authenticity and the choices teachers make, have to be balanced against the opportunity to enable students to access and control their own learning through technology. Ownership of learning was identified by Teacher A as something made possible by technology because it provided a range of processes for students and this was echoed by Teacher D when he spoke about making resources available on Fronter:

‘So children can do a lot of independent things and you can also interact with whiteboards and them... That's actually taking ownership of their own learning. Whatever a teacher teaches is not the ultimate.’

This comment about students working independently of the teacher and accessing resources beyond the teacher, indicates that the authority of knowledge, no longer rests only with the teacher and the textbook in the classroom. Teacher D acknowledges how technology has caused a questioning of his cognitive authority and as mentioned in the previous section this is something he encourages through discussion in his classroom.

Technology has brought new resources and processes into the classroom, challenging the information literacy skills of both teachers and students, but it has not prompted a concerted look at this aspect of learning.

4.1.6.4 Collaboration and the role of the library

In order to ascertain teacher perceptions of working with librarians and how they see the role of the librarian in raising information literacy levels, questions were asked about their experiences of working collaboratively with others. The aim was to examine factors that affect collaborative work between colleagues in a school environment. Where the librarian is not mentioned in responses, teachers were then asked for their views of collaboration with a librarian.

In contrast to the views of Teachers A, E and L first discussed in this chapter, Teacher C's views of collaboration began by focussing on work with the librarian and how this transferred between teachers and therefore, classrooms in her subject department:

‘we [students and staff] feed back to the board and between us [staff] we help the students to see what the question's about, see where they need to go to answer it, to understand where the gaps are in their information so they can then go and fill them, to make connections between the ideas.’

‘all the A level teachers [in R.E.] are aware of the language that we use and the structures that we use in the library and they all re-enforce it so it’s not just a one person job and it’s not just once.’

Teacher C is describing her experience of team teaching where the focus is shared equally between topic content and skill development. It is evidence of both terminology and practices being shared by teachers, to re-enforce the information literacy learning previously done in the library, supporting its transfer by students between their department’s classrooms. This example of practice with A level students described by Teacher C has most of the features attributed to inquiry learning, excepting the choice of research question, which, in this instance is an imposed past exam paper question:

‘I don’t need a survey to tell me... I know those kids took up that technique and ran with it and they’re applying it to other subjects. I know they have study groups based on our method for other subjects as well... and I think the reason it’s had a bigger impact this year is because we’ve transferred it into the classroom for them as well. And it’s not just me, it’s everybody all four rooms, they do the same thing.’ (Teacher C)

The students in Teacher C’s example could see the pragmatic advantages gained by using a ‘real’ exam question. Perhaps it is possible to take a flexible approach to selecting the features of inquiry learning and that some characteristics may be more influential than others. This could also be affected by the context and age of the students, as in this case, A Level students have very different perceptions and needs compared to Year 7 children.

Teacher C, like Teacher A in the first section, feels that skills teaching should be dependent upon the context and carefully shared with the subject. This is based on her experience as an Advanced Skills Teacher working in an advisory capacity and it certainly lends weight to Teacher A’s fears that skills teaching can be detrimental to the understanding of a subject:

‘... it can have its downsides... the bottom line is you lose your subject... So I’m working with both those baccalaureate coordinators because they have totally lost RE.’ (Teacher C)

This teacher felt the skills process had completely overshadowed the subject content and the balance had to be retrieved.

Teacher G referred to the cross-curricular collaboration, critiqued by Teacher A earlier in this chapter, as poorly planned and lacking a clear outcome, by observing:

‘I’ve been doing that collaboration with Year 9 around the holocaust and you know with RE and Drama... it enables a child to drill down and understand something in depth as opposed to superficially.’ (Teacher G)

‘Often I say this to the children. “If you learn how to, for example, when we talk about planning an essay, I will say you have to use this skill in every single class,

in History or Geography... because sometimes its form [different writing conventions]’

Teacher G has observed students achieving a deeper understanding of the topic because of the cross-curricular experience and it shows that she makes explicit references to skill transfer and how differently it might look when practised in other subjects. This highlights the potential benefit that team teaching could give to staff, compared to solo working in cross-curricular work. If Teacher A and G had some shared classroom experience they could be able to capitalise on those skill transfer opportunities for students and their understanding of how differently the skill would be employed in each other’s context could be greatly enhanced. It could also give them a deeper understanding of each other’s viewpoint for an evaluation of this unit of work.

Shared classroom experience is one of several factors that affect the nature of collaborative work between teachers. Time for planning and curriculum mapping was mentioned by Teachers A, E and L. Other issues that have emerged, concern:

‘I think historically perhaps not everyone has been keen [department culture]’
(Teacher F)

‘One of the big issues about staff not really relaxing into creative partnerships and collaboration because we’re always worried about, we have to produce evidence’ (Teacher M)

Both of these refer to cultural issues that affect the quality of In-service Training. Teachers can feel both isolated and reluctant to engage when they feel threatened by monitoring and evaluation processes.

The librarian’s role, for supporting staff professional development through In-service Training and its contribution to skills teaching was mentioned by both Teachers A and L in broad terms, as an agent for change. In the data from the other nine teachers in this research there is a greater level of detail in some of the descriptions which enables one to identify how the role contributes to raising information literacy levels. In this example from Teacher C she comments:

‘I do actually consciously try and build the bridges and consciously try and work on relationships, as well as on teaching, because it wasn’t until I read the feedback you’d got from students, that I realised how important that was but also how they learn and how they make connections and transfer it to skills.’

This reflects evaluation of joint work researched by the librarian and fed back to staff for their consideration. The role of resourcing work in the classroom was identified:

‘We’ve done more and you’ve prepared more book boxes for us. So the technique they learn with you in the library has literally been transferred into the classroom.’ (Teacher C).

This identified how resourcing can support the continuance of information literacy work begun as a team teaching experience between the teacher and librarian.

Where information literacy work is done within one subject it has been identified by a different subject teacher as beneficial in her classroom too:

‘they can look for information, look for relevant information, with the skills they learn in the library you can tap into’ (Teacher F)

Teacher F realises the importance of communication and planning:

‘on producing materials and trialling them... you would have to be involved from the beginning because I think you were away when I brought down that stuff. You were cold with it really’

This resonates with Teacher L’s bigger picture view of the need to include the librarian at leadership levels in curriculum reviews and training in order to make more staff aware of information literacy and its employment more systematic.

When the librarian’s role is felt by the teacher to contribute an expertise it can be said to raise information literacy levels:

‘collaborate with you in the library on plagiarism as well as how to reference and cite properly and stuff that has been really useful, particularly for the kids who you know are going to go on to uni and to college and it sort of really raised their game and made their coursework stand out.’ (Teacher H)

Issues that have emerged in relation to collaboration concern the need for a culture within a department to be conducive to sharing expertise; the need for opportunities for In-Service Training; and the need for good quality planning processes underpinning cross-curricular collaborations; and the need for evaluation methods which are about professional learning rather than formal performance review. In relation to the role of the librarian, team teaching was perceived as valuable, particularly where it is supported into the classroom and then shared by teachers in a department. In this way information literacy teaching is enhanced and student transfer of learning is more likely to take place.

4.1.7 Overall Summary for Nine Teachers

All respondents, apart from the two science teachers, expressed information literacy in terms of subject learning processes and experiences. The teaching of search is generally absent from practice, apart from where work has been done closely with the librarian. When teaching of information literacy skills was described approaches ranged from the holistic, through serendipity to the linear and tightly controlled forms. Teaching strategies mentioned include

modelling, discussion, teacher/student role reversal, activities where the locus of control moves to the student and involving the librarian in the session.

The use of technology raised several issues such as how it offered new processes for creation, but also encouraged a copy and paste culture. Some teachers felt the classroom was enriched by the range of resources and others were more concerned by the plethora of poor quality resources. The complex issue of control was also a source of concern ranging from feeling under pressure to use the technology, but not wishing it to drive teaching and learning choices to a recognition that it helps move the ownership of learning to the student while at the same time opens up the teacher's cognitive authority to question.

Two types of collaborative work were described; cross-curricular projects, where teachers work in isolation from each other but on the same topic and work, which is team taught with the librarian. Strengths and weaknesses of cross-curricular work is that it can result in deeper student understanding of a topic but without better teacher planning is unlikely to lead to learning transfer. Team teaching with the librarian can lead to a common language for information literacy and a sharing of teaching strategies that can support learning transfer between classrooms.

The role of the librarian was recognised, in relation to staff development and its role in teaching and supporting students and teachers were able to identify, where this had raised information literacy levels.

So the data from these nine teachers has given insights relating to the issues affecting information literacy, collaboration and the role of the librarian in a secondary school context. Chapter Five will thematically analyse the data from these interviews in conjunction with the issues and factors identified in the literature study.

5 Chapter Five

The purpose of this research has been to answer the following research questions:

1. What does it mean to be information literate and is it changing in the new technological age?
2. How can librarians and teachers work together to raise information literacy levels?
3. What is the role of the librarian in raising information literacy in the school for both teachers and students?
4. What is the understanding among teachers of the importance of information literacy and of the role librarians can perform in the teaching and learning of this subject?

The research process has been a complex learning experience and has been expressed in the following figure:

Information Literacy and The Secondary School: Outline process and relationships in this research

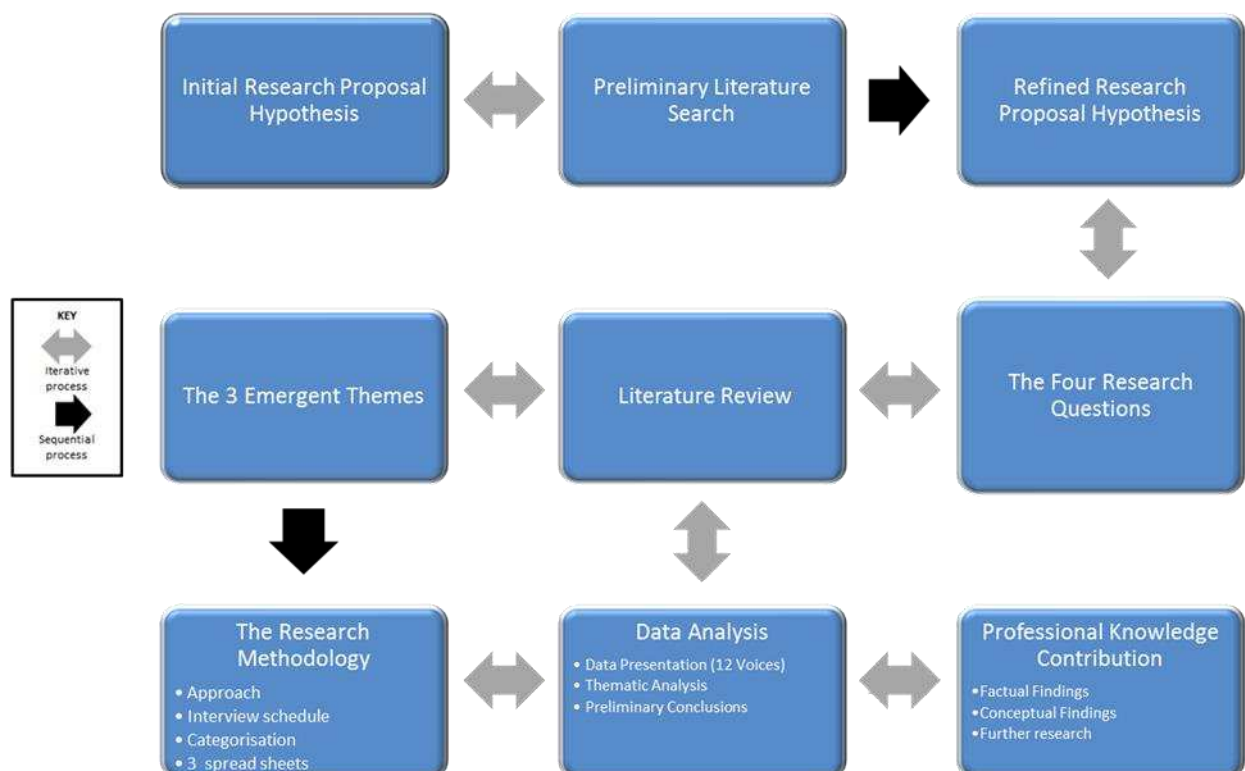


Figure 5.1 Outline of research process and relationships

Studying the literature enabled three main themes to emerge:

- Theme One: The meaning of information literacy
- Theme Two: The absence of effective pedagogy for information literacy and learning transfer
- Theme Three: The librarian's role and the implementation of an information literacy agenda

Each of these themes is examined in this chapter and under a series of sub-headings, the problems and issues that were identified in the literature will be combined with those strands from the interview data for analysis. The outcomes will be summarised in answer to each of the four research questions as we near the end of the chapter.

5.1 Discussion

5.1.1 Theme One: The meaning of information literacy

In order to make sense of information literacy, it is necessary to consider the problems and issues that have emerged from the literature, with those from the empirical work. In the literature there are a wide range of published definitions and models that leave school librarians to question which to use in their work. If the chosen model is not viewed as entirely relevant by others in the school setting this can seriously hamper engagement in developing information literacy work. In the empirical work, there was a low awareness among teachers of the term information literacy and when asked to define it, they did so through the lens of their individual subject context. The result is a multiplicity of different perspectives within this one school setting for the meaning of information literacy and this too has implications for the advancement of information literacy work.

Using a published definition or model that does not provide a close fit for the teacher's priorities, the students' needs or the curriculum task causes a feeling of dissonance. Closer study of these definitions and models of information literacy in Chapter Two (Marland 1981; American Library Association 1989 in Bawden 2001; Eisenberg and Berkowitz 1990; Kuhlthau 1993; Herring 1996; Lewis and Wray 1997; SCONUL 2003; Chartered Institute for Librarians and Information Professionals 2004; Bawden 2008) revealed how they reflect the concerns and interests and contexts of their writers. A definition written by a librarian (American Library Association 1989 in Bawden 2001) is different from one written by a higher education teacher (Bawden 2008). Therefore making sense of information literacy is contingent upon the context in which it is being used.

Indeed as the empirical data in this research shows, the teachers quickly move from a general expression of what information literacy might be, to descriptions of relevant practice in their subject. Each of these teacher definitions differs depending upon the respondent's view of teaching and learning within their subject contexts. They emphasise particular aspects of information literacy to fit their subject's approach to learning. For Teacher E her priority is the student's personal response to an artwork, it is the interpretation of this and how it is synthesised into their own creation that is central to the information literacy experience in art. In the maths classroom Teacher D highlights the students making sense of information through discussion where they compare different methods for solving mathematical problems. Through argument they synthesize and articulate their new understanding. Teachers B and L through the subject lens of science define information literacy in relation to published secondary sources and the technical skills of interacting with these books, articles and web materials. Teacher A equates information literacy with inquiry learning in history and equally, Teacher C whose subject religious education is part of the same humanities faculty, defined it as the ability to access the curriculum. They are all referring to information literacy as a way of learning the curriculum in this secondary school environment.

At the outset of this research there was a concern that what it means to be information literate may have changed in this new technological age. In the literature digital resources have caused controversy over how learning, learner expectations and information literacy itself may be changing (Tapscott 1998; Prensky 2001; Oblinger 2003). Most of which seems unfounded (Rowlands et al 2008; Bullen et al 2009; Wesch 2008). In this second decade of the 21st century communications technology is now all pervasive in our schools and has become an assumed part of the environment. Some teachers (Teacher H, K and B) have evolved their practices more quickly than others (Teacher L) and see the technology as a source of greater choice in processes and assessment methods. The profusion of resources enables a richer experience and increased information handling opportunities for students (Teachers A, H and K). There were also concerns regarding how it has encouraged the copy and paste culture and that there is a profusion of poorer quality resources which complicates the challenge for information literacy (Teacher K and L).

Technology's potential to attract greater student engagement was also recognised (Teacher A and D) but, in agreement with discussion in the literature (Wesch 2008) it was felt that student skills still need support for use when learning within subjects (Teacher C and E). Although there were additional technical skills to be taught (Teacher E), there was a belief that learning itself had not been changed (Teachers A, G and K) by the increasing use of technology. Overall, if one's view of information literacy is a holistic one, that sees the skills as synonymous with learning, then the increase in technology has added some complications but not essentially changed the nature of information literacy itself.

5.1.1.1 The contextualising of information literacy

The secondary school environment and its curriculum are quite different from that of the primary school or the college and university sectors. The aims and content of both the academic and affective curricula coupled with the structure of a pastoral system are unique in each sector of education. Therefore what it means to be information literate in each of these sectors is different because people are operating in relation to a different range of tasks, requirements and circumstances. In each of these sectors the range of resources used will differ in nature, depth and presentation, so information literacy cannot be defined by resource or by one way of using a skill. Hence this research must evolve from addressing the more general question of what it means to be information literate in the new technological age to developing a specific understanding of what it means in a secondary school context.

A holistic view of anything sees the whole as being greater than the sum of its parts. In this instance, each of the parts represents an interpretation of information literacy made by the teachers. The whole is that bigger picture of the student and how their information literacy develops and moves between contexts within the school and from there into the community and workplace. It is recognising that at a simple level it may be teaching the use of a resource at the point of need. At a more complex level, it is about supporting a learner's growing understanding of how to use his abilities and that knowledge in different situations. The context of being in a secondary school, as an organisation with specific aims, provides constraints for what it means to be information literate in that setting. The organisation has requirements that must be met by its staff so that it can achieve its aim of educating students via an outcomes-based examination system. The aims of this process are the dominant influences on how information literacy will be viewed in this context by its inhabitants. The teachers and the students, work to a range of different demands and as individuals with varying interests and abilities, this human element adds a whole series of complications to an already complex process.

As a result there is a need to re-conceptualise information literacy as an intellectual act, one that exists in fusion, with subject learning. By doing so we may be able to support students in moving to higher levels of practice. The thinking that is required when encountering new information and ideas, when considering the task and responding to it, is myriad in nature. Interpretation, synthesis, analysis, choices and evaluation are often simultaneously in operation. It is a multi-modal process. There is so much more to finding something than putting the right word into a search engine. Search is an essential part of critical thinking, as we seek answers and understanding throughout the process. To reduce search to the technique of using an index is to deny the intellectual engagement that is taking place when one is information literate. In

the face of complexity and complications the information literate person evolves coping bringing to bear all of their knowledge and experience to make judgements. It is this disposition towards information literacy that teaching in a secondary school context needs to recognise, in order to support students, in moving to higher levels of practice.

Re-conceptualising information literacy for specific practice in a secondary school situation is not in itself a formula for success but it may cause people to reflect on matters differently. A holistic view of information literacy in a secondary school context values how practice needs to be tailored within each subject. In addition as part of the bigger picture I would suggest it takes into account the spaces between subjects where student learning also exists, for instance in the library and at home. In this view of information literacy, the issue of learning transfer has high importance. As a result of contextualising information literacy for the secondary school it has become clear that it is necessary to identify what progress look like in information literacy in this setting. Although this research is about raising information literacy levels in a secondary school, neither I nor the literature have defined these levels. Therefore in the next section, I will attempt as one of the outcomes of this research, to identify what information literacy levels might look like in a secondary school context.

5.1.1.2 Information Literacy Levels

I have created a table to illustrate a picture of what information literacy learning may look like at different levels of progress. Its roots have grown from several different sources in the literature, infused by personal professional experience and informed by the needs of the secondary school context.

The first of these roots lies in my previous research project with Key Stage 5 students, described in chapter one, which was influenced by Bloom's Taxonomy of Learning Objectives (Bloom and Krathwohl 1956). It provided the notion of improving progress and allowed us to determine where information literacy teaching had been successful. This was defined by the student, either through their work or in their interview, where they demonstrated their knowledge of how to learn, adopting new strategies, adapting them in other contexts, and a self-awareness that enabled them to evaluate their skills as a learner. These behaviours mark out the more independent learner from the beginner.

The transfer of skills learnt in one context to another, critical thinking in relation to the experience and a student's growing metacognition, are identified in the literature as indicators of successful learning (Flavell 1979; Nisbet and Shucksmith 1986; Perkins and Salomon 1989; Beyer 1997; Limberg 2007). In a holistic view of information literacy these are the indicators of an information literate student. In a secondary school setting these features are characteristic

of a student who is able to work more independently and is less reliant on the teacher as the cognitive authority for all knowledge. Encouraging students to become independent learners through their individual ability to access and use information is the librarian's goal as expressed in the Alexandria Proclamation (United Nations Educational, Scientific and Cultural Organisation 2005) mentioned at the outset of the literature review. It is all of these strands of thinking that I have tried to capture in this picture of what information literacy might look like at different levels of progress:

Levels	Learner Attainment	Characteristics	Ability	Teacher Role
5	Metacognition: self-awareness as a learner	Critical thinking, tests methods and consciously hones skill	Adapts and integrates for own use and articulates personal impact	Accommodate student autonomy
4	Understands complexity and has coping strategies	Selects appropriate technique and shows critical thinking	Confident in making choices and testing them	Provide opportunities for independent application
3	Adapts skills to different contexts	Understands differences	Discusses principles/rules for different subject contexts	Guide practice examining use in other contexts
2	Awareness of transfer	Connects with previous experience	Needs prompting and support to make explicit link to other experiences	Guide practice using knowledge of work in other subjects
1	A trained behaviour	Knowledge of resource e.g. a dictionary	No transfer, personal selection or autonomy of thought	Close direction

Table 5.1: Information Literacy Levels

The table describes attainment, how this can be identified by its main characteristic and what the student should be able to do as a result at different progress levels. The Learner Attainment column is inspired by the theories of Flavell (1979), Bloom and Krathwohl (1956) and Tabberer (1987). Library instruction that focussed on training a behaviour leading to fact-finding rather than encouraging a deeper form of learning was critiqued in the literature (Tabberer 1987; Limberg 2007; Williams and Wavell 2007) but in my experience this is often the initial teacher role when introducing a skill or topic for the first time. Therefore it is shown here as the first level of practice to represent the initial introduction and of a skill.

The table describes an attainment level, how this can be identified by its main characteristic and what the student should be able to do as a result. This is an attempt to define what this learning looks like, if we know what good practice looks like then we can think about how to support students in reaching that place. The other key aspect of this table is that no specific resource, subject or student age group is specified. Its design is influenced by a holistic view of information literacy which puts the learner, changes in their understanding and as a result their behaviours, at the centre of its focus.

The Characteristics, Ability and Teacher's Role columns at levels 2 to 4 were inspired by the work of Nisbet and Shucksmith (1986), Perkins and Salomon (1989) and Beyer (1997) to utilise what is known about learning transfer. The features of level 5 are particularly influenced by Flavell (1979) and Bloom and Krathwohl (1956). The teacher's role is identified as close direction initially, but in work where skill transfer pedagogy is being used, it is at the level of guided practice. At levels four and five as students have gained experience, confidence and exhibit these qualities by making personal choices, they demonstrate their understanding of how to adapt their abilities in different circumstances and improve their performance. This means they are gaining independence and can eventually work in a more autonomous manner.

The table is also written in response to the finding in this research of how important it is to contextualise information literacy in the teaching of different subjects. The table is intended to be applicable in any secondary school subject or school library situation. This is another reason why specific information literacy skills are not listed and the emphasis has been placed on how skill learning takes place and becomes absorbed into practice. This is in recognition that it is essential for information literacy to be tailored to the dominant approach to the use of information literacy in each context and to the task in hand.

Levels two and three have implications for teacher training and knowledge. They require an understanding of where else the student has experience of this skill and a knowledge of what that practice looks like, so that principles, rules and differences can be examined with students. This requirement will be considered further in the section on implementation.

The issue of learning transfer between contexts is acknowledged in the interview data (Teacher A, B, C, E and L) and pedagogy is mentioned in the form of teacher modelling and discussion (Teacher A and G). Otherwise a somewhat passive attitude towards the issue is demonstrated (Teacher E) reflecting other priorities and a lack of knowledge as to how to take the matter forward. This might be an indication of how little empirical research has been published about pedagogy for learning transfer. This table could be a way of bringing relevant pedagogical theories for learning transfer (Nisbet and Shucksmith 1986; Perkins and Salomon 1989; Beyer 1997) to the wider attention of secondary school teachers and librarians.

This table is a graphical representation of skill learning, a complex topic and this chosen form is necessarily reductive by nature. The table's purpose is to stimulate thinking about making progress in information literacy visible, to inspire pedagogy and methods of assessment, rather than provide an exhaustive guide or a prescriptive solution.

5.1.2 Theme Two: The absence of effective pedagogy for information literacy and learning transfer

The issues underpinning this theme are

- a) whether to teach information literacy in a stand-alone session or embedded in a subject context;
- b) coupled with the absence of empirically tested pedagogy in the literature and in professional education, particularly regarding search, synthesis and assessment of information literacy; and
- c) this is further complicated by the limited knowledge and practice of pedagogy for teaching transfer of learning.

5.1.2.1 Stand-alone or embedded in a subject

The first of these issues, whether to teach information literacy in a stand-alone session or embedded in a subject lesson has partly been answered by the previous discussion of how important subject context is to teachers in this secondary school setting. The argument for teaching these skills with a subject context is further supported by the literature which identified generic library skill lessons as failing to achieve deeper student understanding and learning transfer (Brake 1980; Lincoln 1987; Tabberer 1987). This literature argues that teachers found a generically taught, linear series of skills too prescriptive and simplistic (Williams and Wavell 2006; Lincoln 1987; Tabberer 1987). This argues that teaching skills as part of a subject allows their complexity to be revealed and students to make more meaningful connections with them (Limberg 2007; Limberg et al 2008). Yet as the data in this research shows some aspects of information literacy such as search are rarely addressed by teachers. There may be a number of reasons for this: search is time-consuming and curriculum time is under pressure; if the teacher provides the resources then differentiation can be planned. Another reason for not including search could be that its intellectual aspects are under-valued. A generic skills framework may not have the relevance or flexibility to suit teacher needs, but without any tangible guide, some aspects of information literacy are not being addressed.

This gap in information literacy teaching suggests a role for the librarian to raise staff awareness of this aspect. Engagement with this may depend upon the knowledge and confidence of the librarian (Hopkins 1984; Rafste and Saetre 2004; Morris 2010). Engagement may also be affected by the school's culture and whether there is a librarian's contribution to training and discussions of pedagogy (Valentine and Nelson 1988; Streatfield and Markless 1994). Certainly any training needs to include 'action images' (Miles 1987 in Information Management Associates 2009). If staff are given examples of what search can look like and where one can intervene with questions and discussion points, tailored to their subject's interests, they are much more likely to adapt this into their practice. This is an argument for librarians to situate the skill within the context of a subject utilising its key terminology and with an understanding of the specific rules applied to its use by the culture of the subject.

Librarians were critiqued for putting too much emphasis on search (Streatfield, Shaper and Rae-Scott 2010) but this might be in response to a vacuum perceived in current teaching practice, like the one shown in this project's data. The criticism is valid if librarians do not move beyond the initial search activity to the task requirements in relation to the student's understanding because search can only be engaged with critically and at an intellectual level, if the process involves these elements. Otherwise the level of the interaction concerning search is a mechanical one and superficial in nature, failing to engage with the student's knowledge and understanding. For the librarian to be associated only with this level of operation perpetuates the division of labour between teachers and librarians identified in the literature (Valentine and Nelson 1988; Streatfield and Markless 1994). This fails to provide a good model for teacher development or raise information literacy levels. The library operating at this level will not be integrated in the school's core business of teaching and learning and it is unlikely, to be consciously linked with raising attainment, by school leadership teams.

Another reason why the more challenging nature of search and the processing of information are not addressed is because the teacher's emphasis is placed on the outcome rather than the process in a lesson (Williams and Wavell 2006). In the examples of practice given in this research the search experience is restricted by the source provided, time allowed and nature of the task, often reducing the synthesis to fact-finding and sequencing activities which have been identified as resulting in low information literacy levels (Limberg 2007). The balance between process and outcome has always been a source of tension for teachers (Lincoln 1987). Teachers are under pressure from OFSTED (Burns 2012; Office for Standards in Education 2012), published school exam league tables and performance review methods to provide active learning, assessment for learning and good exam results. This leads to a focus on content knowledge rather than skills.

In relation to search, the literature discusses a difference in perception and priority between teachers and librarians, as teachers did not recognise the identifying of keywords with students

as important (Markless and Streatfield 1994; Williams and Wavell 2007). When I raised the absence of search experiences in discussion with a teacher, to ask if teachers resource the topic and the lesson's activity because this is the expectation of their role when devising new schemes of work and writing lesson plans. The teacher's response focussed on a different rationale for the absence of search, as recorded in my research diary:

'Time is a key point but so is differentiation.... by resourcing the teacher can control and differentiate the level and difficulty of access of the info and can also assess the success of the outcome as they can see what the students have elicited and what they have not. This is not possible in a random 'show and tell' for many kids confuse 'cut and paste' and research. When questioned they have no understanding. My lot are usually asked to elicit the 5 most important things but with 'bring and buy' they simply print and then blag stuff they clearly don't understand. As is (student name) putting up a picture of the theatre at Stratford, a poured concrete edifice, and confidently telling us this was Shakespeare's theatre.'

So time and the need to ensure adequate differentiation are reasons for the absence of search in this lesson. The teacher has clearly observed the disadvantages of sending students away to search by themselves. Her focus is the need to support all, to reach the intended outcome, resonating with the findings in the literature (Williams and Wavell 2006). This means that students will receive less guidance and experience to think critically about accuracy, relevance and appropriateness during searches for information. Therefore concerns expressed by higher education teachers would appear to be well-founded (Brabazon 2007; Rowlands et al 2008; Wesch 2008). It also means where practice is more teacher-led, with resources provided in this way there will be fewer opportunities for librarians to contribute to information literacy teaching (Valentine and Nelson 1988; Streatfield and Markless 1994). If time and differentiation are crucial to a teacher, then a librarian's approach that is over-focussed on search, teaching a generic set of skills in an undifferentiated manner (Orrell 1991) is unlikely to be accommodated by them.

On the issue of whether these skills should be taught in stand-alone or embedded in a subject the data in this research points to teaching within the subject context. The teachers explain information literacy in terms of how learning takes place in their subject. They teach skills such as visual literacy (Teacher E) at the point of need. They call on the librarian to demonstrate and explain an aspect (Teacher H) at the point where the students need to do that work. They demonstrate an understanding that the skill may have some general principles but see its deployment as unique in their own subject area (Teacher A). Yet as the following shows their teaching approaches have some common characteristics.

Ten out of the twelve descriptions of practice in the data of this research described the source as provided by the teacher, of the two contrasting examples, one involved the modelling of search, with a hands-on experience for students and guidance on how to improve search:

‘...librarian, do research skills first of all and the students research using books, using the internet, using whatever they want, and then we feed back to the board and between us we help the students to see what the question’s about...’ (Teacher C)

It was the only example given which involved a team teaching experience with the librarian and of a session that was not limited to one lesson. Therefore with time as a less restricted element, attention could be given on how to search and evaluate findings. The final description involves students being taken on an art gallery trip, guided in their exploration of it and encouraged to make responses to the artworks and then:

‘They can do the further research and then they get excited and then they’ll start to make connections with the research and their personal response and they might find something that they’ll connect up which is very unexpected.’ (Teacher E)

In this example the formal research element differs from the previous accounts as the sources are not provided in the lesson. The students are expected to engage alone in the process. This is the point at which most students experience anxiety in the information literacy process and would benefit from some guidance (Kuhlthau 1993). Clearly Teacher E sees some positive outcomes but the phrase ‘might find something’ suggests luck plays a considerable part and the higher education experience (Brabazon 2007) and research (Rowlands et al 2008) observes that without teaching, these search skills remain at a superficial level and an awareness of the need to evaluate for relevance, accuracy and authority are developed more by chance than design.

In reflecting on whether these skills should be taught in stand-alone sessions or embedded in a subject lesson, the factors that emerge from the literature are very critical of the former approach. Without some form of framework the danger is, as the data collected in this research shows, that some information literacy skills will not be sufficiently addressed. This points to a potential role for the librarian in raising awareness, but engagement with it as the literature has evidenced, is complicated by an individual’s confidence and knowledge levels (Hopkins 1984; Rafste and Saetre 2004; Morris 2010). Where teaching knowledge is insufficient the librarian’s work is likely to be incompatible with teachers’ practices and this may restrict how far librarians are able to influence work on information literacy. This might be further complicated by the dominance of a more teacher-led classroom style which would allow fewer opportunities for librarian involvement (Streatfield and Markless 1994; Valentine and Nelson 1988).

The empirical work for this research was carried out in a school with myself as an experienced librarian. It is evident that working within a subject context is more effective (Teacher C), but to do so successfully takes time in the building of work relationships. Crucially it has also taken time to gain a deeper understanding of teaching and learning which is absent from the professional education of librarians (Morris 2010). Perhaps if this had been in place from the outset rather than learnt on the job and through part-time study, then greater progress would

have been made in affecting the practice of more teachers to raise information literacy levels in this setting.

5.1.2.2 The absence of empirically tested pedagogy

When considering the second issue of what is effective pedagogy one must acknowledge the absence of empirically tested pedagogy in the literature for information literacy. This is critical, because without formal training this is where school librarians look for guidance. The literature is dominated by definitions of information literacy which express the author's view of what it is, but do not tell the reader how to go about achieving the outcomes (Marland 1981; American Library Association 1989 in Bawden 2001; Eisenberg and Berkowitz 1990; Kuhlthau 1993; Herring 1996; Lewis and Wray 1997; SCONUL 2003; Chartered Institute for Librarians and Information Professionals 2004; Bawden 2008). Even where these writers provide frameworks, strategies and project ideas they are not accompanied by references to how these have worked in practice (Eisenberg and Berkowitz 1990; Kuhlthau 1993; Herring 1996; Wray and Lewis 1997). This gives the reader the impression that with the right technique or rubric the task can be done and no insight is given into the real-life complexities of teaching and learning. Such frameworks (Wray and Lewis 1997) do not guide one to develop good quality questioning or differentiation practices. There is a danger that without an acknowledgement of the real-life complexity of teaching, librarians cannot develop practice that will help students reach higher levels of information literacy.

Librarians look to the literature to find 'action images' (Miles 1987 in Information Management Associates 2009 p.7). If what they mainly find are tools that have not been evaluated or updated to reflect today's school context, such as summative style assessment rubrics (Eisenberg and Berkowitz 1990 p. 125) then practice will not be improved.

Where empirical work has been published looking at information literacy teaching, the research has often focussed on a model such as the nine steps (Marland 1981) or the Plus model (Herring 1996) and through critique of its implementation and outcomes, pedagogy has been identified (Tabberer 1987). There have been criticisms of information literacy taught in generic, linear and stand-alone forms (Brake 1980; Tabberer 1987; Lincoln 1987; Williams and Wavell 2006), contrasted with practice found to be effective. The following draws together practice that was found to be effective in the literature with findings from the data in this research for points of comparison and contrast:

- Assessment
 - Assessment is difficult, tests isolate skills from a process, so teacher judgement is essential (Tabberer 1987 p.59) and peer assessment was found to be useful

too (Tabberer 1987 p.120). An emphasis on dialogue enables student understanding to be gauged (Williams and Wavell 2006 p.5).

- In my research data the following methods were described: peer assessment is used (Teacher A and Teacher H); teacher judgement based on the quality of the dialogue (Teacher C and D); and teacher assessment of the outcome (Teacher C and G). On the whole their descriptions do not contain assessment specifically of information literacy skills, but of the students' understanding, as a measure of how far the lesson's outcome has been accomplished.
- Introducing skills
 - When skills were introduced students needed time to practice them and to plan their use (Tabberer 1987 p.29 and p.73).
 - In the research data time was raised as an issue preventing the teaching of information literacy skills (Teacher C and L) because of the priority given to curriculum content. Teacher E observed that it was not possible to assume they have skills, like visual literacy, so when introduced it needed teaching time. This supports the view that an affinity for technology as promoted by the digital native image (Prensky 2001) should not be confused with skills and a deeper understanding of how to employ them (Wesch 2008).
- Learning progress
 - An example of creating a path for progression to enable students to be supported from rote-behaviour responses to a self-questioning of their process is indicated in the form of a ladder of instructions for note-making (Tabberer 1987 p.106).
 - Progression for information literacy skills was mentioned in the data because it had been built into a previous scheme of work for Science (Teacher L) and the need for some to be put in place for Year 7 was recognised (Teacher B). In one department, work on information literacy was initiated for Year 7 students but it was felt to not be as good as the quality of the work done with sixth form students because of the constraints on time (Teacher C). Measuring progress in skill development is patchy, even though assessment for learning practices are used because there is no framework to guide thinking about the characteristics of different stages. When the QCA's Personal, Learning and Thinking Skills Framework (Qualifications and Curriculum Authority 2007) was first produced it was supposed to be followed by an assessment framework, but this was never published. A grid of learning objectives for research and study skills was produced for the national Literacy Across the Curriculum initiative (DfEE 2001) but this treats skills as generic, linear and prescribes according to the year group of the child. As we have seen in this research the contextualising of

information literacy is important and so it is perhaps unlikely that this generic approach was found to be relevant.

- Teacher's role
 - The teacher's role should be cast as a careful manager of 'stumbling' (Tabberer 1987 p.126), so that the experience is not perceived by students as having a pre-determined outcome which would encourage them to fact-find in response (Limberg 2007), rather than explore to create new understanding. Emotional aspects of the experience need to be acknowledged and the teacher role is more meaningful when in the form of interventions made throughout the process (Kuhlthau 1993; Todd, Gordon and Lu 2011).
 - In my research data, work with sixth formers is described by Teacher C in which staff is cast as co-explorers with students, searching and constructing an answer together. Technology was pointed to as freeing the teacher from teaching from the front, to a role where they could move around the room and intervene in a more meaningful way (Teacher A). In terms of emotion the students' lack of resilience when encountering information (Teacher L) was recognised and in one response (Teacher E) this was given as a possible reason for not introducing these skills too soon. Another teacher works consciously to build relationships as a way of emotionally securing student engagement (Teacher C). The emotional aspect is recognised by some teachers, but not all saw themselves as responsible for securing students emotionally, prior to learning.

Studies which have looked at inquiry approaches to teaching information literacy within subjects (Kuhlthau 1993; Todd, Gordon and Lu 2011) made the following observations about pedagogy:

- An inquiry teaching approach
 - Is preferred as it supports deeper learning (Limberg 2007; Williams and Wavell 2006).
 - In the research data this way of working was felt to be beneficial (Teacher A and C) but took a lot of ground work by the teacher to make it a deeper experience (Teacher G) and from the outside could look quite noisy and messy (Teacher D) which in a culture of frequent lesson observation by others deterred some teachers (Teacher M) from using this approach.
- The locus of control moving from the teacher to the student
 - is an important feature of this work because it is seen as empowering the students and moves them away from the sense of a pre-determined outcome to a

point where they can question the cognitive knowledge of the teacher and textbook (Hopkins 1984; Limberg 2007). It requires strategies to support activating prior learning and the creation of authentic inquiry questions that engage students and motivate them (Todd, Gordon and Lu 2011).

- In my research data authenticity was interpreted by teachers as, not only referring to students constructing their own questions, but also in giving them experience of objects for stimulus that they could relate to in their everyday life (Teacher A). Encountering real art works and real theatre experiences were felt to be better than any virtual replicas (Teachers E and H). Activating prior learning was mentioned (Teacher H) but as a matter of course, something that is done by teachers in most lessons to initiate engagement. Technology was seen as contributing to moving the locus of control to the student by offering more choices for how they can work with material in virtual learning environments (Teacher D) and in providing choices for how work can be presented (Teacher A and E) but there were also concerns that technology itself should not drive pedagogical choices (Teacher L). An inquiry experience was pointed to as empowering students to work more independently (Teacher A, C and G).
- The issue of control was a source of tension where one teacher felt there was too much control exerted around both students and teachers (Teacher E) to the point where innovation in the classroom felt stifled (Teacher M) and from another point of view where controls were not being sufficiently harnessed over student actions (Teacher J).

When considering effective pedagogy, synthesis must be considered and as observed, in the literature review, this is generally not addressed by published definitions and frameworks. The exception to this is in the EXIT model where students are asked to transform findings into something else, so that they have to process the content in some way (Wray and Lewis 1997). In this empirical research, examples of synthesis activities were given and these have been analysed for the range of low to high levels of information literacy that they will encourage:

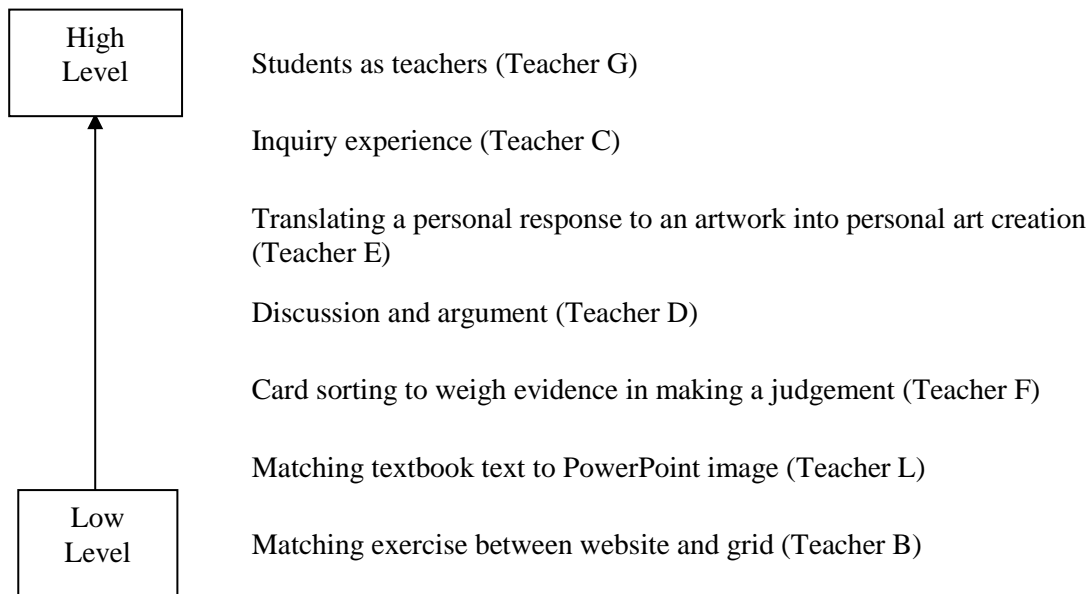


Figure 5.2 Analysis of Teaching Activities for Synthesis

This was done using the characteristics identified in the table of information literacy levels.

Generally there was a feeling that technology had contributed tremendously in the last four to five years so that the quality and range of resources on offer was tremendously improved and that this not only supported student engagement (Teacher D) but the quality of their synthesis too (Teacher A).

Another feature of pedagogy that emerged in this empirical research, which was not evident in the literature, was the role of collaboration between subject teachers. There were comments about the need for better planning in order to have clear outcome targets (Teacher A), there were also observations from experienced teachers that where work took place it was felt to result in deeper learning for students (Teacher D and G). Without the clear outcome targets Teacher A felt the topic learning was superficial which is reminiscent of criticisms made of project-based learning (Tabberer 1987). Published research (Kuhlthau 2007; Tabberer 1987) also observed that such projects have poorly signposted processes and these lack assessment, with much of the evaluation placed on the end product. This would make it hard to judge progress between information literacy levels.

5.1.2.3 The limited knowledge and practice for teaching learning transfer

This third aspect concerns learning transfer which as an indicator of rising levels of information literacy needs to be considered, yet the published models fail to address this issue (Marland 1981; Eisenberg and Berkowitz 1990; Kuhlthau 1993; Herring 1996; Wray and Lewis 1997). In my experience students are not currently assessed for skill transfer between subjects. In most of the literature that focusses on empirical research the issue of learning transfer is not addressed and where it is referred to, effective practice for it has not been tested, or identified (Limberg 2007; Herring and Tarter 2006). In this research, strategies for encouraging transfer were described as modelling (Teacher A and C), co-ordinated teaching of a topic (Teacher D) discussion to make links between use in different subjects (Teacher G) and consistent use of language between teachers in a subject department to foster transfer between classrooms (Teacher C). Only the latter had been monitored, by the teacher concerned, to check for implementation and effectiveness. These strategies were described by individuals working in the same institution but there was no widespread recognition of them, in the data, giving the impression that they are not systematically used by most teachers.

What we do know about pedagogy from the literature is the importance of abstracting principles and examining application in other contexts to identify rules (Perkins and Salomon 1989). Currently teachers do not know where or when in the curriculum, a skill such as measure is being taught. There is not sufficient knowledge of how it is used in Geography compared to Design and Technology so that they can confidently examine principles and rules for use in different contexts with students. Teacher A recognised that if she understood about persuasive speech techniques, as taught in English, this would deepen the quality of her teaching of historical speeches. Skill transfer theory (Nisbet and Shucksmith 1986; Beyer 1987; Perkins and Salomon 1989) would also identify this as the point where she would be able to make the knowledge link between the two contexts explicit. This would enable her to look at the differences in the way the speech is analysed according to the discipline in which it is being studied with students. In my empirical work, teachers recognised the need to address skill transfer (Teacher A, B, C, D, E and G) but like information literacy, this is absent from professional teacher education. What is understood is rooted in theoretical rather than empirical work in the literature and my research data shows there are implications for teacher education as it does require a greater knowledge of skill application in different subject contexts.

I have outlined in the previous section what is identified in the literature as effective pedagogy for information literacy, but clearly there is a need for further empirical research to address pedagogy for the teaching, transfer of learning and assessment of information literacy. Rather than as previously focussing on a model (Tabberer 1987) or whole-school implementation

(Lincoln 1987), or one teaching approach over another, it could look at a skill and how it is deployed in different secondary school subject contexts. Details of how it needs to be adapted could be traced coupled with a student's perception of it and how this changes in relation to different influences. Such a study might reveal much that would be of value to teachers and librarians in a secondary school setting. Meanwhile it is clear from the data in this research and in the work of others (Williams and Coles 2007) that what is known from research has not translated into practice or the knowledge base of teachers and librarians which brings us to the issues and factors affecting our third theme, the question of implementation.

5.1.3 Theme Three: The librarian's role and implementation of the information literacy agenda

The issues underpinning implementation concern the nature of collaboration between teachers and librarians; perceptions of the librarian's role; and the factors of managing change in a school environment such as its culture and leadership. Each of these issues has a number of factors emerging from both the literature and empirical data that complicate matters and need to be considered.

5.1.3.1 Collaboration

An examination of collaboration is interlinked with perceptions of the librarian's role as these determine how the library service is used by a teacher and how far they involve the librarian in their teaching. Factors arising from the literature concerned

- a) the influence of teaching style;
- b) constraints of time;
- c) a teacher's knowledge of information literacy;
- d) and the traditional division of labour between the two professionals.

5.1.3.2 Teaching Style

The first of these, teaching style is very influential in determining the level of contact with the librarian, the role afforded to them and choices made about pedagogy (Valentine and Nelson 1988; Streatfield and Markless 1994). The literature of teaching information literacy tends to shape the landscape into a somewhat polarised view of skills which are taught in a form that is linear and resource-focussed or as an iterative, task relevant, inquiry process.

I could polarise these further and observe that the linear, resource-focussed approach reduces both teaching and learning to a set of techniques, viewing information as a problem to be solved and the learning as something to be managed. An approach that could be characterised as

positivistic in nature and I would add to this where the cognitive authority rests with the teacher and textbook. At the opposite pole we have the holistic approach which sees information as complex, ever-changing and views learning as a personal knowledge-making process where cognitive authority is open and should be questioned. There has been clear criticism of the first approach (Williams and Wavell 2006; Limberg 2007; Tabberer 1987; Lincoln 1987) as too prescriptive, simplistic and resulting in fact-finding behaviours giving poor quality learning outcomes. The second approach, inquiry learning can easily result in the same poor outcomes and low information literacy levels where the task is not subject relevant and therefore given the teacher's cognitive authority to make it meaningful in the eyes of students (Moore 1995; Loertscher 2005; Kuhlthau et al 2007). Where inquiry teaching styles are promoted as embedded in a subject (Loertscher 2005; Kuhlthau et al 2007) assessment is either not discussed or summative in nature which is not sufficient in today's school environment.

As my data shows, in practice it is not simply a matter of choosing one or the other teaching style. Some classrooms use methods with characteristics from both approaches (Teacher A, Teacher C), some teachers under the pressures of curriculum constraints and time available veer more towards one approach than the other. Even where they may be taking a more directed and linear approach to information use, this does not mean that the complexity of information is not acknowledged and examined by the teacher's modelling (Teacher L). Choice of teaching methods are influenced by a person's experience, knowledge of pedagogy, their judgement about what would suit their students in this curriculum task and these can grow over time. Therefore these approaches to teaching might be better viewed in the form of a continuum:

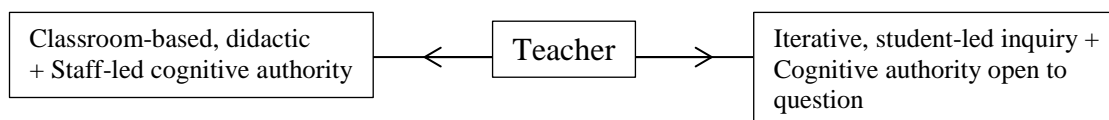


Figure 5.3 A Continuum of Teaching Styles

The literature of the library field leaves practitioners with a false sense of dualism between the two approaches, one that does not really exist in the teaching practice of today's classrooms. Teaching and learning can assume different approaches in response to the complex demands and expectations placed on it. In all parts of the continuum the data in this research shows the teacher values the librarian's role of resourcing their unit of work (Teachers C and J). Where a role is afforded to the librarian for information literacy teaching, to be effective it requires the librarian to have knowledge of students for differentiation, to energise the students' prior learning, to use the language of the subject context (Teacher C) and all of this has implications for librarian education.

The literature concluded that where teaching is more formal and classroom-based, teachers were less likely to include the librarian, than if they were using a more inquiry style of teaching

(Valentine and Nelson 1988). Yet in my data where a more controlled and linear approach has been taken to the use of information a role has been offered to the librarian (Teacher J). Equally there are teachers who are using inquiry styles (Teachers A, D and G) but this does not necessarily mean that the librarian is involved in the work, except perhaps tangentially through resourcing activities. These teachers are comfortable with student-led work where the cognitive authority of knowledge is open to question; they deliberately move the locus of control to the student. Information literacy itself may or may not be part of the teaching and learning focus. As a result of this research I can see that although I have evolved work to be task and student relevant and therefore meeting the teacher's priority, I have allowed the balance to move too far away from maintaining their awareness of the information literacy aspects of teaching and learning. This knowledge and how highly valued the subject context is by the teacher for determining how a skill is deployed, will inform my future planning and the setting of outcomes that include information literacy levels.

5.1.3.3 Time

Time was the second factor in the consideration of collaborative work with teachers and this can, in part be ameliorated if I am able to bring to the discussion my sense of cognitive authority gained through this research for: how information literacy is defined by this secondary school context and to share a clear picture of what progress consists of at the different information literacy levels. This will facilitate planning for process, product and assessment outcomes. Time is an issue in relation to all work carried out in school and my data shows that the resourcing role of the library is highly valued by many teachers and in part this is because it saves them a great deal of time and so this aspect and its impact should not be underestimated by librarians.

5.1.3.4 Awareness of Information Literacy

The third factor was the lack of awareness and knowledge of information literacy held by teachers (Morris 2010) and the need to change teacher education to include it. In addition teachers were found to feel under-confident regarding their own information literacy skills (Williams and Coles 2007) and in response librarians were urged to help create a strong information use culture. Five years have passed since this latter research and the picture created by my data is one where teachers have much greater access to information and a growing confidence in relation to using communication technologies in their teaching, to resource and discuss it. An awareness of information literacy was found to be low on initial discussion with teachers in this research but they quickly moved to expressing the concept as practice in their subject context. They had an understanding of information literacy as part of the learning and

that it takes place in ways that are particular to their subject and in response to the demands of their curriculum and exam format. The term information literacy may not be familiar but there is an awareness of the difficulties involved: the poor student search skills, poor quality synthesis and the low levels of learning transfer between subjects. Currently there is a mix of teaching practices for information literacy that do not necessarily either address the problems perceived by the teachers or raise student information literacy levels.

This research has enabled me to bring together the knowledge of learning transfer theory with the idea that we want to support students to move from rote behaviours to more independent ways of working coupled with increasing metacognition. The result has been to identify what information literacy levels look like in a secondary school context. In studying change management theory, the path way forward in sharing this knowledge is to also create 'action images' (Miles 1987 in Information Management Associates 2009) of what practice can look like, in different subject contexts. The table of information literacy levels may be able to create awareness and future research stimulated by it might be able to generate 'action images' providing insights for practice.

Where teacher awareness of information literacy is low this is further complicated by the level of knowledge and experience of it, held by the librarian (Hopkins 1984; Rafste and Saetre 2004; Morris 2010). This makes it difficult for them to offer training to teachers and develop collaborative work with them. As pointed out previously, teaching modules are absent from library education and the literature alone is not able to offer sufficient support in terms of empirically tested work. So there are implications for future training and support offered to librarians.

5.1.3.5 The Professional Divide

The last factor in this consideration of collaborative work is the division of labour that the literature found existed between librarians and teachers (Streatfield and Markless 1994; Valentine and Nelson 1988). If a librarian does not move beyond the activities of search, then search itself cannot be examined for its intellectual aspects, this only happens through the lens of the student's understanding in relation to the subject's task. By moving beyond the traditional role one can draw attention to synthesis and learning transfer aspects of the process and so contribute to raising student information literacy levels. This requires engagement with pedagogy and an understanding of the teacher's preferred teaching style. In the work described by Teacher C, where we work closely together and intensively with sixth form students, these elements have taken time to evolve. That evolution has involved learning for both staff members and impacted on our thinking and practices. There is no one formula for successful

collaboration nor is there just one definition for information literacy, both depend on context, circumstances and what needs to be achieved.

Collaborations do not have to be long-term in order to be successful; some may be of short duration like those described by Teachers H and M, but can be equally effective in affecting future practice and outcomes. Perhaps collaboration between a librarian and teacher must involve some division of labour. For instance, a pedagogical role for the librarian may include some in-class assessment activities with students and occasionally as co-assessor of the final outcome to highlight the information literacy elements. It is also possible that once these elements have been established as valuable then the librarian should allow the labour to divide, so that they can move on to work closely with another teacher. There is usually only one librarian and there are many teachers in a school environment. Evaluating those assessment outcomes is a useful way of reviewing the teaching process and to cement collaborative work practices (Markless 2009), but does not require the librarian to participate in co-marking work with the teacher every time. Doubling up in this way may be valuable for training purposes but economically may not make sense in the longer term. Ultimately for the librarian to contribute meaningfully they must have a knowledge of the task objective and the subject assessment criteria even when not fully involved in end-marking.

5.1.3.6 Librarian's Role

Having examined the factors affecting collaboration this section will study the issue of how perceptions of the librarian's role affect the implementation of information literacy teaching. In Chapter Two I brought together two theoretical conceptualisations of librarian roles to create the following amalgam:

1. Counselor – Integrated curriculum
2. Tutor – Integrated instruction
3. Instructor – co-operation
4. Lecturer – co-ordination
5. Organiser

(Montiel-Overall 2005; Kuhlthau 1993)

Figure 5.4 Amalgam of Two Librarian Role Theories

Laid out in this hierarchical fashion denotes the aspiration to move up the levels and that level 5 is superior, yet as the data in this research reveals there are aspects of all these roles that are valued by teachers. Sometimes they require close working in order to develop new schemes of work (Teacher L and C) and at others a one-off contribution in the style of the lecturer is asked for (Teacher H, J and M). As two teachers observed, without the library they would mostly rely on the internet in the classroom for information, yet with the library materials they are able to

Markless 1994; Ofsted 2006; Shannon 2009). The socio-cultural practices of a school environment were referred to as constraining the nature of information literacy (Limberg 2007). This is done by indicating that a selected canon of knowledge dominates, encapsulated in government produced curricula, exam board syllabi and teacher designed schemes of work. It leads to a view that knowledge is fixed and to work that signals it is unchanging and unchallengeable. This is a somewhat extreme interpretation reflecting a sense that where the cognitive authority for knowledge is tightly held it is less open to study from many different angles and questions (Hopkins 1984). In a school cognitive authority in the eyes of the students is held by the teacher and the textbook (Wilson 1983). If these are the only resources available then information literacy operates at a low level because the answers are already decided by these sources. If the student senses knowledge is pre-determined then their level of operation is to find the right fact to match the question asked by the teacher (Limberg 2007). The search is limited in scope and the action is influenced by the student's previous experience of this teacher and this kind of task.

In the data teachers identified the problems of poor search and synthesis skills amongst students and they described work designed to address this, revealing a mix of practices across the school, leading to varying levels of information literacy. One of the outcomes of this research is to recognise that information literacy is viewed differently by teachers according to the processes of study in their subject. Without a guide for assessment of information literacy, improving practice to raise levels will remain difficult. The table designed earlier in this chapter to depict information literacy levels attempts to make student progress visible. If we know what stages of progress can look like then we can use this to inspire innovation. Evaluation of this table in use will be needed in order to achieve clarity (Fullan 2007) and 'action images' (Miles 1987 in Information Management Associates 2009). Progress in implementation requires some proof that information literacy teaching can address a need in this environment (Fullan 2007), which if met will help staff achieve their performance and subject goals.

Another implication for change management stemming from the identification of information literacy levels concerns teacher education. Levels two and three in the table require an understanding of where else the student has had experience of this activity. This requires knowledge of what this looks like in other subject contexts so that principles, rules and differences can be examined with students (Perkins and Salomon 1989). This is also potentially a task for future research to study how skills change in different school subject contexts and perhaps usefully identifying pedagogy that is found effective for teaching them.

The landscape is still a complex one, but this research has identified some of the complicating factors and this can contribute to future decision-making. Realisation that contextualisation is all important means the dissonance felt in relation to published information literacy definitions

written for other contexts can be avoided. Teacher A mentioned mapping in terms of when, what topics are covered and by which subjects. One way forward could be to map skills to describe what they look like, how they change in application from subject to subject. Any plan for moving work forward in terms of initiation, implementation or continuation needs to be studied for its quality and practicality. The data shows that staff do not feel they have sufficient time for planning and that when they do, outcomes are not clearly agreed (Teacher A). In terms of moving information literacy forward, outcomes need to be carefully focussed for process, product and assessment. The table of information literacy levels may be able to support the planning of this development.

Socio-cultural practices can create constraints, but also afford opportunities and in this setting there is a history of collaborative work, which as the data shows (Teacher L) has created support at the leadership level for staff training and school planning done by the librarian. Raising information literacy levels has been shown (Teacher C) to have an impact on attainment and this is recognised by the head teacher so this environment is receptive to thinking further information literacy concepts. At this particular time due to external factors at government level there is a strong focus on reader development and this creates a strong expectation of the librarian role (Ofsted 2012). Inevitably work in a school environment moves from simple to complex with complications regularly appearing that fragment energy and the orientation of goals.

The role of teachers in a school is fundamental to the implementation of information literacy. They are all too aware of the constraints from the practicalities of time to the philosophical, this was summed up by Teacher E when she spoke about the controls imposed by school structures, epitomised by the linear nature of the sketchbook.

5.2 Summary

The following is a summary in relation to the original research questions:

1. What does it mean to be information literate and is it changing in the new technological age?

What it means to be information literate is contingent on the context in which the skills and knowledge are being used and this found support in some of the literature and in the research data. For a student being information literate in a school context means responding to tasks set by the teacher and making progress in retaining subject knowledge and being able to communicate it verbally and through writing. Teachers fused their understanding of information literacy with how learning takes place in their subject area and so, how and when skills are deployed is different for students, when they move between classrooms. Initially rote

behaviour responses are expected from students and subsequently more independent thinking and activity is the goal teachers have for them.

Even though teachers identify that students have poor search skills, information is often provided in classroom experiences, negating the need to spend time on search. This is partly to differentiate, but possibly to avoid wasting time with the envisaged poor quality outcome and so a circle is formed where search is rarely addressed. In the school context a student does not have to search, but can survive by relying on the teacher and textbook, in part because the curriculum identifies a pre-determined area of subject knowledge as the learning objective. Later on this changes when students study advanced courses where more independent work is expected and then independent search becomes a real requirement. Grades will be low on an advanced course when based only on the knowledge from a teacher and a textbook. It is a difficult transition for students to make when previous teaching has not addressed the skills now required. In view of the impact of the technological age on other parts of their lives and future employment prospects this is a serious gap in curriculum provision.

A table to identify information literacy levels has been designed, shown earlier in this chapter, to bring together what has been learnt from the literature, with what is now understood about information literacy practice in the classroom. The table is an attempt to make the notion of progress visible. The hope is that it will inspire thinking about pedagogy.

Most of the teachers in this research fused information literacy with learning and felt that in this new technological age it was not the nature of learning that had changed but that the expectations of students for a more interactive and visually stimulating experience that had grown. Technology has brought about a rapid set of changes in schools over the last five years and the skills of teachers are changing immensely in response to both the demands and the potential for what is possible. Some do feel challenged by the amount of information now available and the librarian's role in resourcing is appreciated as a result, but this also indicates a role for the librarian in supporting the information literacy of teachers in addition to students. What it means for a teacher to be information literate in the secondary school potentially differs from students as they are operating within different boundaries, cultural expectations and priorities.

Technology adds technical skills to the list of items children must learn. These operating tasks should not be confused with the information literacy skills of synthesis and analysis which apply to all texts regardless of medium. Technology offers more choice for resources, format of outcomes and assessment for learning methods which may facilitate the inclusion of information literacy. Where choice is made available there is the opportunity for individual interpretation and therefore the use of higher order thinking skills and potentially resulting in

higher information literacy levels. Both technology and the library make these materials and tools available outside of curriculum time so that learning moves outside of the classroom.

2. How can librarians and teachers work together to raise information literacy levels?

Raising information literacy levels begins by recognising the complexity of the skills and the situated nature of their learning. There needs to be a balance between designing work that is subject task relevant, differentiated for student need, with profiling the pertinent information literacy principles and rules that require closer examination to engender learning transfer. In reality different models of collaboration are required of the librarian at different times from a range of colleagues.

Collaborative work needs to be jointly evaluated for mutual professional learning. In turn this can create action images of what this work looks like for use by other colleagues, and to develop some common language and strategies to infuse practice across a department.

To raise information literacy to the higher levels requires attention be paid to learning transfer at a whole-school level. School leadership teams need to facilitate an exchange of subject skill knowledge through collaborative work and mapping, therefore through both practice and reification. Curriculum mapping is a well-known practice and so is skill mapping in the sense of listing where certain skills are required in what subjects and at different Key Stages, but this would need to take a further step. Skills need to be mapped for what they look like and how they are applied in different subjects. Then teachers can share their knowledge with students to examine principles of use to support learning transfer between contexts.

3. What is the role of the librarian in raising information literacy in the school for both teachers and students?

In order to raise information literacy levels the librarian must conceptualise and articulate the intellectual aspects of information literacy. The role must move beyond a responsibility for search to also address synthesis and learning transfer which raise student attainment and support their growing independence as learners. This would require librarians to become both confident and knowledgeable in their pedagogical role so that they can support teachers and students. An individual can study, learn from school colleagues and make use of school systems, but provision for a teacher-librarian qualification available nationally would be highly beneficial.

Teachers value the librarian's teaching role when:

- a) their knowledge and skills improve the quality of student outcomes;
- b) if they have a knowledge of student needs for differentiation purposes;
- c) are able to activate prior learning;
- d) and employ some of the subject specific language in support of the teacher's goals.

These characteristics underpin the librarian's role of highlighting for teachers and students, the information literacy aspects and principles as appropriate.

For this role to be fully realised the professional education of librarians needs to be reviewed. There are a large number of librarians working in the education sector from primary to university level yet there is no course available that examines teaching, learning and information literacy.

Two continua of practice were envisaged, one for teaching styles and the other for librarian roles. In the reality of working to raise information literacy levels the librarian will meet this mix of practice with a range of different responses. Flexibility to move between one's roles is required to meeting the different needs of teachers and students. By acknowledging the nature and complexity of the school landscape, one recognises that to further the agenda of information literacy, there is a whole-school role for the librarian as participant and contributor to staff training.

4. What is the understanding among teachers of the importance of information literacy and of the role librarians can perform in the teaching and learning of this subject?

Information literacy is fused with how learning takes place in a subject and certain aspects are prized by teachers if they improve the quality of the student's learning outcomes. This is the teacher's area of expertise and they thoroughly understand it. Teachers recognise that the student skills of search, synthesis and learning transfer are poor and for a variety of reasons little is done to address these, particularly search and learning transfer. There is an understanding that moving the locus of control to the student and opening up the authority of knowledge for questioning is more likely to engender independent learning. Nevertheless many teachers feel hampered from developing more of this work by time constraints and academic monitoring

systems. This is at the heart of the conflict, between times spent on learning processes where information literacy is situated, as opposed to mainly focussing on the outcome of learning.

The resourcing role of the librarian is highly valued by teachers. They do not have time to read a wide range of children's literature and this knowledge coupled with reader development activities is recognised as a foundation for opening access to the curriculum. Teachers particularly value support in resourcing topics for their teaching. This enables the librarian to provide a multi-media experience for students of books, objects and electronic sources so that the literacy of the topic is enriched. This provides more opportunities for students to interact with a range of good quality information sources.

Teachers in this research setting value the library space itself, not only as a place for students to receive support but they also recognise that the information literacy, the ways of learning in the library are different and of benefit to students. They also see it as a source of support for their own teaching and that there is a good knowledge of the students held by the librarian on which they can draw for support. The other roles of the librarian as lecturer and team teacher were recognised for their contributions on different principles of information literacy and valued for impacting on the learning of students.

The teachers in this school setting recognised that a mix of teaching practices exist for information literacy and they acknowledged the role of librarian as someone with an overview of curriculum, teaching styles and the ability to take a lead in catalysing change.

6 Chapter Six

6.1 Conclusions

6.1.1 Purpose of the research

The aim of this research has been to examine how information literacy levels can be improved and this has meant exploring what it means to be information literate in a secondary school. I chose information literacy as the focus for my research because developing this aspect of curricula and teaching practice is part of my purpose as a school librarian.

What it means to be information literate in this school setting is shaped by the subject curricula and how these are taught, so exploring this concept from the perspective of the teacher has been illuminating. This has given insights into how information literacy is viewed and how it is being taught in different subject areas. Analysing this in conjunction with what has been learnt from the literature has offered insights and enabled both factual and conceptual findings to emerge. It should be borne in mind when reading that this research is small in scale, based in one school setting and the work of a participant researcher. It is hoped that it provides insights for others to consider when developing their information literacy practices in similar settings.

6.1.2 Original Contribution to Knowledge

There are three contributions that I would highlight and the first is how the meaning of information literacy is affected by the context in which it is being practiced. The contextualization of information literacy has been discussed in previous research (Limberg 2007) and this has been taken further in this research. The meaning of information literacy is contingent on the context in which the skills are being deployed. The data has captured a range of teacher viewpoints which illustrate how differently information literacy is perceived from the perspective of their subject. A historical information source is approached and used quite differently (Teacher A) compared to a painting by Picasso (Teacher E) or to the role of secondary information sources in science (Teacher L). The implication is that the meaning of information literacy also changes when the student moves from the classroom to the library. In the classroom the experience of search is minimal and in the library it is pivotal to both the teaching and learning.

The second contribution is the table of information literacy levels. The blend of thinking behind its design is explored in Chapter Five. It is an original contribution to knowledge because unlike previous frameworks, which tend to specify information literacy skills in terms of a knowledge of resources, the process of using them, or increased use of the library, rather it

seeks to articulate how the learning of a skill, begins and progresses. It attempts to make the notion of progress visible and identifiable. It emphasizes the student's personal understanding of how their skills and understanding are changing in relation to becoming more independent or autonomous in the exercise of them. Unlike previous designs its structure is heavily influenced by the concept of learning transfer. Rather than viewing information literacy as a technical process it highlights the living nature of information literacy as it is deployed in the context of a wide range of learning opportunities.

It is not intended as prescriptive but as a stimulus to discussion about pedagogy and assessment. It is written with the view that it could be relevant to the teaching and learning of information literacy in any subject classroom or school library space, specifically because it does not emphasise particular resources or the operational skills of using them. This is in recognition of how those features depend upon the context in which the information literacy is situated. The design is rooted in a holistic view of information literacy which centres on the learner, rather than a separate information literacy curriculum. It recognizes that attainment and abilities will be different for each learner and these will change when they move between contexts.

The third contribution regards the role of the librarian from how it is understood by teachers to contribute to the teaching and learning of information literacy. Where information literacy teaching has been perceived as effective it has been jointly evolved with teachers, tailored to the requirements of the task, the curriculum priority and the learning needs of the students. It has become clear that the principles of information literacy, if made more visible are more likely to engender the transfer of learning, from one context to another. The librarian's expertise in resourcing the curriculum is valued for the way it supports teachers, provides students with many more information-handling opportunities and how this can open up the cognitive authority of knowledge to questioning. The proliferation of digital information lends emphasis to these aspects of the librarian's role. Despite the digital proliferation, the physical space of the library has particular importance in a school setting for the provision and support it gives students outside of lesson time, coupled with the value placed on how it can develop reading to underpin a student's wider literacy needs.

This chapter will continue with responses to the research questions, followed by sections describing the factual findings, the conceptual findings, methodological reflections, aspects for further research and finally the professional implications for school librarians.

6.1.3 Research questions

- 1. What does it mean to be information literate and is it changing in the new technological age?**

There is no one meaning for what it means to be information literate, it is dependent upon the context in which the skills and knowledge are being used. The information literacy demands of a university environment are different from those of the secondary school. Within this setting, the skills required and the way they are used in the history classroom differ, from those of the art room or the science laboratory.

The range of information objects in this new technological age are increasing which means more technical skills are required, but the higher order skills of synthesis and evaluation remain unchanged. Intellectual aspects of search need greater emphasis in the school setting, not only in response to the profusion of new information sources, but as preparation for advanced courses. Although what we are learning and the ways in which we can do it are changing, how we learn, is believed to essentially be the same.

2. How can librarians and teachers work together to raise information literacy levels?

In order to raise levels there needs to be clarity and mutual understanding between librarian and teacher of what information literacy levels look like and how progress between them can be demonstrated by students and assessed by staff. Hence the formulation of a table to depict what progress in information literacy learning may look like which is presented in Chapter Five. It is hoped that the table's contents can contribute to thinking about pedagogy for information literacy teaching.

In order to make information literacy a higher priority, it must be perceived as both relevant to teaching and a contribution to student attainment. Teaching that is situated in subjects is more likely to meet this need than generic, stand-alone sessions. The inclusion of subject-specific language could also contribute to collaborative work as it would help satisfy a curriculum priority. Where work is evaluated it can contribute to professional learning and improvement of practice.

3. What is the role of the librarian in raising information literacy in the school for both teachers and students?

Where information literacy work is evaluated it can be shared with teaching colleagues so that action images for effective pedagogy, a common language and strategies can be developed both with individuals and ultimately at a whole-school level. Flexibility in moving between roles could allow the librarian to fulfil a wider range of needs in the school. This could range from organising resources, lecturing upon particular points to performing as a team teacher

responsible for planning, teaching and assessment. Ideally a balance needs to be achieved between contextualising work within a subject but also ensuring the principles of the relevant information literacy skill are addressed and made visible. The principles and rules for how an information literacy skill is deployed in different contexts require further research.

The librarian's role of resourcing is valued by teachers so that a range of multi-media information objects are presented for students to experience. These support the literacy of the topic and to help increase the number of opportunities for information-handling. Potentially this facilitates a basis from which students can question the cognitive authority of others which supports their progress to a higher level of information literacy. All of this is underpinned by the value placed on the librarian's role of providing space and time for study outside of lesson hours coupled to the foundation work of developing reading skills.

4. What is the understanding among teachers of the importance of information literacy and of the role librarians can perform in the teaching and learning of this subject?

Information literacy is understood by the teachers in this study as part of how learning takes place in their subject area. They recognise it is important, but feel hampered from addressing it fully, due to the constraints of time, curriculum priorities and academic monitoring activities. The role of librarian was recognised by these teachers as supporting them by resourcing, team-teaching, provision of staff training and at a whole-school level in helping to catalyse change. The librarian role was also recognised for the way it supports students within and outside of lessons through the provision of a library environment with study support and reader development activities.

The next sections will briefly outline the factual and conceptual findings of this research:

6.1.4 Factual Findings

Information literacy is taught by teachers in this setting as part of learning in their subject but not explicitly referred to, due to a low awareness of the term. These activities can vary in the range of progress levels they may achieve from low to high when analysed in relation to the table designed to depict information literacy levels. Progress to higher information literacy levels may be complicated by this low awareness and the absence of a clear guide with action images to show how skills are deployed in different subjects according to their principles and rules.

On a wider scale changing this situation may be further complicated by the low confidence of many school librarians in their pedagogical role, the absence of literature that discusses empirically tested pedagogy for search, synthesis and with clarity for the assessment of information literacy. The literature identifies teacher judgement, peer assessment and dialogue as assessment methods. The data in this study also identifies teacher judgement and peer assessment, but in addition the outcome produced by the students too.

In those parts of the teaching process found to be valued by teachers: differentiation; a knowledge of the students; task objective; subject specific language; assessment criteria; resources; and relationships; there are implications for the teaching approaches used by librarians.

There is a limited knowledge shown in the literature and the data from this research, of the pedagogy and practice, for learning transfer. This research has found a range of strategies being used by teachers but these are not recognised in a way that is systematic and widespread within this setting. This suggests there is a limited knowledge amongst teachers for how differently a skill is deployed in subjects other than their own and this has potential implications for future training.

It was found that where practice for information literacy teaching was adopted by a subject team of teachers, this had been catalysed by team teaching with the librarian who helped to create a common language and set of strategies, which they subsequently translated into their classroom practice.

6.1.5 Conceptual findings

6.1.5.1 Contextualisation of information literacy

The meaning of information literacy is contingent, upon the context in which it is being articulated, or used. This finding is based on study of the definitions examined in the literature which were found to reflect the writer's own understanding shaped by the cultural context in which they operated. When these definitions are used in the secondary school context they require adaptation. They are incomplete for the complexity of real-life practice in that setting. At the micro level, the data has shown that the meaning of information literacy is different within the teaching of each school subject.

The teachers' descriptions of practice in this study show there are a multiplicity of views and approaches present. Teachers view the use of information differently from each other. This is shaped by their subject's approach to learning where information literacy is involved. For a student, being information literate in a secondary school context means responding to tasks set by the teacher, making progress in retaining subject knowledge and being able to communicate

it verbally and through writing. At the macro level it means knowing how to operate within the culture of different subjects and teaching styles to produce the required outcomes.

In accepting that what it means to be information literate is dependent upon the context and that this varies in each subject, then equally the meaning of information literacy is different again in the library. This learning environment has different requirements and expectations and this includes search which in this study has been found to be almost entirely absent from the classroom experience.

6.1.5.2 Re-conceptualising Search

The approach to search varied among the teachers in this study, depending upon how they viewed the use of information in their subject. Practice described by teachers in this research gives the impression that the many ways of searching for information resources are rarely included in subject teaching. Re-conceptualising search as an intellectual process and contextualising it within subject teaching may lead to an increase in its inclusion in the classroom experience. In order to reach these higher levels the ability to adapt and deploy this skill appropriately is required.

6.1.5.3 Information Literacy Levels

To monitor progress between levels, an understanding of what these levels look like was also found in this research to be necessary. The notion of progress and how this might be developed was articulated by bringing together theories of pedagogy for learning transfer, metacognition and thinking skills (Flavell 1979; Nisbet and Shucksmith 1986; Perkins and Salomon 1989; Beyer 1997). They have also been derived from a knowledge of the secondary school's cultural goal of encouraging students to become independent in their learning and from an understanding, that the more proficient learner is able to transfer and adapt their skills and knowledge to different contexts. The table is intended to stimulate discussion of pedagogy for information literacy to support innovation.

6.1.5.4 A Continuum of Information Literacy Teaching Styles

Both the literature and the data linked teaching, which moved the locus of control to the student thereby opening up the cognitive authority of knowledge to inquiry, to higher levels of progress in information literacy. There was also a view that a more teacher-led approach would be less likely to include the librarian in the experience (Streatfield and Markless 1994). The data in this research found that teachers move between modes for different teaching styles depending upon

a range of factors. Rather than view teaching as fixed in one mode it might be better understood when seen as a continuum:

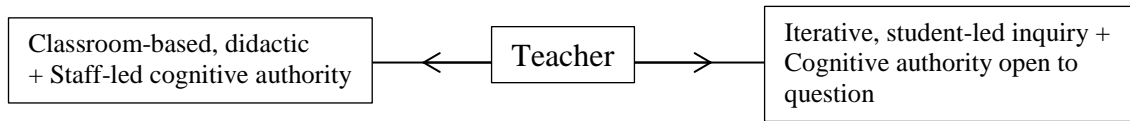


Figure 6.1 A Continuum of Teaching Styles for Information Literacy

The data shows teachers from across the range of these teaching styles valued the role of the librarian particularly with the resourcing of their subject. So in today’s era of post-information explosion, the inclusion or exclusion of the librarian, is perhaps not so heavily influenced by the teaching style in use.

6.1.5.5 A Continuum of Librarian Roles and Types of Collaboration

Theoretical models in the literature regarding role and levels of collaboration were brought together, initially in a hierarchy but then expressed in the form of a continuum:

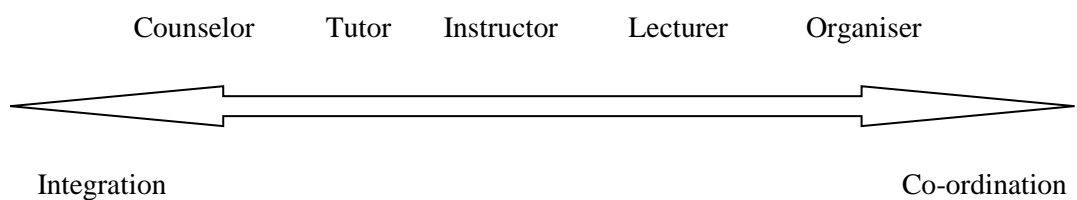


Figure 6.2 A Continuum of Librarian Roles and Types of Collaboration

Just as teachers in this study move between modes of teaching, rarely does a librarian only occupy one role and mode of operation, but may respond in different ways according to expectations and perception of need. Different librarian roles are depicted on a continuum to indicate that movement takes place between them, they are not fixed and this reflects the different modes of collaboration achieved with teachers at different times. It is hoped that by proposing this view of librarian roles, it will give a sense of parity to them recognising that in the reality of today’s school setting it is flexibility from the librarian that is most valued.

6.1.5.6 Cognitive Authority

Theories are often re-visited and their concepts examined for applications in different fields and this cross-fertilisation can be revealing. It was Stenhouse (Hopkins 1984) who perceived the school library’s important function in relation to the cognitive authority of knowledge on behalf

of students. In this vision the library supports a student in moving beyond the textbook to encounter a range of information resources enabling them to question the authority of knowledge. As practitioners I believe it behoves us to examine this concept as one fundamental to our philosophy and relevant to our practice at every level. The data in this research showed potential areas such as the teaching of search, where there is room for the expertise of the librarian to contribute to development.

6.1.6 Methodological Reflections

This section will consider matters of representativeness, validity and reliability.

The approach chosen for this research was relevant to my practice at this time and the outcomes help inform current planning. I have included the personal framework of my experience and understanding at the outset so that a judgement can be made about its effect on my role as researcher. I have striven for professional objectivity and in doing so have had some of my assumptions overturned regarding the nature of information literacy teaching taking place in classrooms and the low awareness amongst teachers of the term itself. I have also been surprised by the emergence of how very important context is to the practice of information literacy in this setting.

There was a purposeful selection process that created the sample group of respondents and this has been related in detail in Chapter Three. Within the boundaries of time and personal resources, twelve voices were included to represent teachers from across the range of age, experience and subject area. In addition, efforts were made to include people with and without experience of working with the librarian, to help ensure a richer and more representative data picture. Ultimately three of the most diverse voices were presented in detail and then data from the remaining nine was selected to flesh out the picture as far as possible within the boundaries of this thesis.

Focussing on teachers in one research setting was a pragmatic decision and it is possible that if the same questions were asked in another school the data may be different in nature. An article is planned to guide other librarians in using these research processes in their own settings to encourage such discoveries. No two schools are the same and therefore are unlikely to yield identical data. Indeed my data, through the eyes of someone with experience different from my own, could vary in interpretation. I have tried to ensure quality in the process by taking steps to involve others, at the design and interpretation stages, both in and outside of the research setting, as described in Chapter Three.

The respondents' validation of their own data has been important. As a participant researcher I examined the concern of reciprocity in the interview process. Overall there is a trust in the

professionalism of my teaching colleagues for honesty when discussing teaching and learning. The respondents themselves are not identical and my reactions had to be tempered with sensitivity to these differences, to make the experience meaningful. If I had the opportunity to do these interviews again, I would want to use the prompts to probe a little more deeply and consistently with all respondents. The prompt material in Appendix Fourteen was chosen as it gave a choice of both text and diagrams to represent information literacy, but again if I was repeating this research, I think it might be very interesting to put a range of models originating in a variety of different contexts before the teacher to ascertain their responses about them.

At the outset I believed there to be gaps in our knowledge regarding the meaning of information literacy in the secondary school setting. My aim in conducting this research is to contribute to filling some of these gaps in a way that is relatable and relevant for teachers and librarians. I believe some of this work's uniqueness stems from it being the work of a school librarian practitioner working at doctoral level. My aim has been to extend the work of others in this field and to deepen our understanding of information literacy in the secondary school setting. New understanding has been brought to existing issues by drawing theories together and reconceptualising the role of the librarian and the nature of collaboration between teachers and librarians. A new instrument has been designed to depict progress in information literacy levels. Ultimately through this research new issues have been identified that are worthy of further investigation.

6.1.7 Further Research

This research has completed a layer of thinking, provoked fresh curiosity and raised new questions for consideration:

- How useful is the Table of Information Literacy Levels? Its use and responses to it need to be evaluated.
- Evaluating use of the table will provide a focus for examining information literacy teaching which aims to support learners becoming independent where pedagogy can be empirically tested. One of the purposes would be to identify action images for disseminating practice.
- How do the knowledge and skills of information literacy change for use in different school subject contexts? One way forward could be to map skills to describe what they look like, how they change in application from subject to subject.
- Thought needs to be given to identifying the principles for these skills and the rules for specific contexts.
- What does it mean to be information literate in a secondary school for a teacher? How is this different for a student or a school librarian?

- What does it mean to be information literate in the primary school?

6.1.8 Professional implications of this research for school librarians

Information literacy is complex and the context in which it is being used determines the way in which a skill is deployed. Teachers see their own subject contexts as distinctly different from each other and it would seem their approach to information therefore is as varied. What it means to be information literate in the classroom is different from the library and it varies within each of those classrooms. Therefore teaching of it needs to be situated in a subject context to be meaningful for the student and relevant to the teacher, rather than in a generic, stand-alone library session.

To achieve this level of meaning there is an implication, that the librarian should have in addition to their body of professional librarianship skills and knowledge, an understanding of: differentiation; a knowledge of the students; task objective; subject specific language; assessment criteria; range of resources; and an ability to cultivate these relationships. Underpinning this knowledge should be an awareness of information literacy principles and rules for deployment in different contexts.

There is a subsequent implication for the wider profession of librarianship of the need to cultivate a vision of information literacy that reflects the multiplicity of contexts and how this affects the changing nature of skill deployment. A definition that is contingent upon the use of information literacy in a library context is unlikely to transfer well to other settings.

Above all, the school library's role in the cognitive authority of knowledge should be examined and valued by librarians, as a philosophical cornerstone to guide policy and practice.

Subsequently that the intellectual aspects of search be given equal prominence with the mechanics of performance. Librarian roles for resourcing and reader development should not be underestimated as these contribute to the questioning of cognitive authority which can enrich the classroom experience.

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8 Appendices

Appendix One

Are your students
suffering from
cognitive bypass?

Symptoms include

- Copying without checking
- Printing without reading

= The absence of learning

Guided inquiry

Tasks	Initiation	Selection	Exploration	Formulation	Collection	Writing
Feelings (affective)	uncertainty	optimism	confusion frustration doubt	clarity	sense of direction/ confidence	satisfaction or disappointment
Thoughts (cognitive)	vague			focused		
Actions (physical)	seeking relevant information exploring			seeking pertinent information documenting		

Zones of intervention

Kuhlthau 2008

What happens if there is no intervention?

- If the 'how to' is not visible then

Give up?

Or copy and paste?

= Lower order thinking skills at best.

Interventions

- Authentic learning context
- Modelling
- Explicit skills
- Transfer

= access to higher order thinking skills

Our offer

- Research tips for Year 7
- Strategies for combatting the cut and paste culture
- Find resources for homework setting
- Pedagogic partnerships

Social disadvantage

- 10 % of Year 7 do not have a computer at home
- 30 % do not have access to a printer
- 36% do not have easy access to the internet
- 34% do not know how to find things on the internet

The dependency culture

How can students make the transition from low level thinking with a reliance on description to confident writers of analysis?

- Thinking skill homeworks for Year 7 and 8

‘A strong school can outweigh many weaknesses in a student’s background, but not all...’

But this is
one of those opportunities.

Educational advantage

- is YOU

As Brabazon says:

Appendix Two

Independent Learning

'It's all sort of spoon fed to us
and we just have to learn it
and remember it.'

‘What to do’

- ‘..it’s not taught throughout anything, you are expected to know.’
- ‘..not that much... we’ve been told what to look up.’
- ‘Not usually in class they send you away.’

'how to do it'

- ‘..don’t really go through how to use the internet, just here is a wide range of resources use it, rather than how to use it.’

What we have learnt

- At the point of need + making it explicit
- Choice of methods
- Active + Interactive
- Modelling
- Back in class:
 - Practice and re-enforcement
 - Language

Their learning:

- ‘Research and planning really, cos I never used to do it.’
- ‘helped us to distinguish between what would be description and what would be analysis.’
- ‘now I tend to read the passage once or twice and then go back and take notes of the most important bits.’

‘although it was kind of late,
cos’ like near the end of school career,
but hopefully will help at uni.’

Proposal

- Year 7 Autumn term experience

To build on this

- Through another subject
- To share what has been done each time so that it can be re-enforced
- And in Year 8...

Appendix Three

Canterbury Christ Church University College

Doctorate in Education

Course: Advanced Research Methods

Assignment 4: Data analysis using one or more analytical tools.

Tutor: Andrew Lambirth

Name: Carol Webb

Title: Independent learning Vs a 'what to do' teaching approach.

Abstract: This paper is a brief analysis of data from five semi-structured interviews that took place in a secondary school in order to ascertain the benefits derived from A level teaching sessions using library resources and expertise. It is concluded that the sessions were felt to be beneficial by the students who perceived that they provided not only a 'what to do' but also a 'how to do it' approach which they felt changed their own learning habits. It is recognised that the data presents a snapshot and cannot be considered of statistical significance and as such, may only be of interest to those who work within the institution rather than considered of value to external groups.

This data has been collected in order to explore the benefits, if any, which were derived from the library sessions by A level RE students. During sessions the librarian models how to take an exam question, interpret what is required, research for relevant material, organise the findings and synthesize them in response to the question. The process is supported by the teacher who as the subject and exam expert is called on to make those finer judgements about relevancy and quality of outcomes. Writing is modelled by both staff working together to create and re-draft text simultaneously in front of the students. Subsequent sessions move from staff modelling (at AS level) to supporting student practice (at A2 level) and finally to co-creating with students (at Synoptic level).

Methodology

Methodology involved a small number of semi-structured interviews (See Appendix One and Two). The interviewees were members of Year 13, who were over the age of eighteen and therefore did not require parental permission for participation in this research. There were five interviewees from a cohort whose population numbered 35 in total, therefore they form 7% of this group. This level of representation means one cannot claim that this evidence is statistically significant. Instead, it is presented here as five voices that can give a brief insight, one that will be valued by those who work inside the institution, however it will perhaps be of limited value to others.

In reading the transcripts certain themes began to emerge and these provided categories under which to group statements (See Appendix Three). Statements that identified a direct form of learning gained by the students from the session were categorised as

‘Impact’. Some statements revealed evidence of the student using the newly learned skill in another subject area and these were labelled ‘Transfer’ statements. Where statements described a style of learning experienced in the session these were put in the category ‘Ways of learning’ in order to acknowledge the students’ recognition of them. Personal statements that revealed a reflection on their own style of learning and how it has or has not changed were grouped under ‘Metacognition’. Statements in the ‘Independent learning’ category represent student actions taken to support their own learning. The ‘Reality’ category evolved as a result of asking the question whether this kind of skill teaching was included in other subject areas in their sixthform experience.

Impact, Metacognition and Transfer of skills

All five students have identified areas of benefit from participating in the library sessions. In their research skills ‘the plus thing automatically shoots up what you want’; note-making: ‘now I tend to read the passage once or twice and then go back and take notes of the most important bits’; ability to synthesize information: ‘once you put it down in a plan and thought about it again while writing the essay, it just helps with remembering it’; and writing skills: ‘how to structure your writing to get better marks was really useful’. Half of the statements in this category refer to the impact that modelling how to write has had on their writing: introductions, conclusions, paragraph structures and the balance between description and analysis when relating evidence in support of an argument.

If the students' statements are read in conjunction with a copy of Bloom's taxonomy of learning objectives (Bloom et al 1956) which is divided into three learning domains in Appendix Four. It can be seen that students experienced the entire range of levels from one to six in all three domains: knowledge, affective and psychomotor. Knowing how to learn, being able to adopt new strategies and have a self-awareness that enables progress to be evaluated, marks out the successful learner from the beginner. This is the cognitive concept known as metacognition, sometimes referred to as thinking about thinking. Learning experiences that are constructed to support students in developing this sense of themselves empower the student towards greater autonomy as a learner.

Business Studies, History and Geography (see dE4, dB4 and cA4ii in Appendix Five and Six) are specifically mentioned as subject areas where skills have been applied from the library sessions with success. Research, note-making strategies and writing are all mentioned as skills that have been transferred. One student comments 'although it was kind of late, cos'like near the end of school career, but hopefully it will help at uni' which points to the need for focussing on the process of learning on equal terms with the product outcome at a much earlier stage in school. Writing skills are taught in English but not explicitly for transfer. This library session shows that when the links are made explicit to other subjects and applications some students make the connection. This experience would be enhanced if those other subject areas were aware of this library session content and able to explicitly reference it for re-enforcement.

Independent learning, ways of learning and the reality

Independent learning in this paper refers to independence of thought coupled with being proactive in decisions about one's own learning needs. These features have already been mentioned as part of supporting learners to become more autonomous. Clearly these behaviours fall into the top categories of Bloom's taxonomy (Bloom et al 1956) and require learning experiences that raise metacognitive awareness in order to develop them. Metacognitive awareness can only be developed where students are explicitly drawn to consider these aspects of themselves. Therefore teaching that includes a focus on the different strategies that can be adopted when approaching a learning task will act as a catalyst for the student to consider their own behaviours in relation to them.

A teaching session where skills are modelled, practised and adopted by students must include a variety of learning experiences to generate participation. Students interviewed identified a number of ways of learning: discussion, group interaction, visual methods and modelling by staff (cB2ii, cB2iii, cC2iii and dD2ix) that they considered worked well for them, enabling them to engage and make progress. All were clear about which strategies they had adopted or decided against as not suitable for them 'I don't use the SEXier or NUT I tend to do it my own way and that tends to work most of the time' (eE1). This participant is dyslexic and his interview responses consistently show a marked indifference towards the text based strategies and a strong preference for the visual and interactive methods. All of these views resonate with the cognitive theories of constructivism (Atherton 2009) and experiential learning (Kolb 1984).




The term 'reality' is not intended to be pejorative, but evolved in response to the question of whether the students had experienced teaching of skills elsewhere in their sixthform subjects. The picture that emerged was one where the teaching of skills is mostly absent. Their experience is mainly one of being told what to do, as opposed to how to do: 'told us to plan but they haven't shown us how' (eE3), 'don't really go through how to use the internet, just here is a wide range of resources, use it, rather than how to use it' (aD3) and R.E. 'is the only one what has shown us how to go about it' (eE3ii).

The students in this study improved their academic performance and developed a clearer sense of themselves as learners. This empowered them to make decisions about what worked or did not work for themselves and adopt different strategies accordingly. They achieved greater autonomy as learners. An aim that is often espoused in teaching, but where teaching is focussed on the 'what to do' approach, rather than inclusive of a 'how to', is one that is unlikely to be achieved.

The national curriculum at Key Stage Three is currently undergoing substantial re-development with the introduction of Personal Learning and Thinking Skills (QCA 2009). This is an opportunity for teachers to divide their focus between the end product and the skills involved in developing it. This shift away from a primary concern with outcome holds the promise of developing the 'how to' approach recognised by the interview students as absent, at a much earlier stage in a school student's career.

This short study has completed its purpose of exploring the benefits experienced by students in the A level library sessions. In response to the ‘reality’ presented by these students the results of this work will be shared with sixthform staff within the institution.

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Cognitive	Affective	Psychomotor
knowledge	attitude	skills
1. Recall data	1. Receive (awareness)	1. Imitation (copy)
2. Understand	2. Respond (react)	2. Manipulation (follow instructions)
3. Apply (use)	3. Value (understand and act)	3. Develop Precision
4. Analyse (structure/elements)	4. Organise personal value system	4. Articulation (combine, integrate related skills)
5. Synthesize (create/build)	5. Internalize value system (adopt behaviour)	5. Naturalization (automate, become expert)
6. Evaluate (assess, judge in relational terms)		

(Businessballs.com 2009)

Appendix Four

Sources	Strengths/Weaknesses
British Education Index	Coverage does not include librarianship journal titles and Information Literacy is outside of BEI's main brief. Information Literacy not a recognised search term. Many references on closer study concerned higher education projects.
Ebsco Database	Extensive coverage of resources. Access to individual articles dependent upon whether the journal title has been selected by the institution to form part of its subscription.
Library and Information Science Abstracts	This database covers the majority of librarianship journals. CCCU's ATHENS subscription did not include the majority of those journal titles. The LISA holdings list was used as a master list and the archives of relevant journal titles were searched individually via publisher websites e.g. Sage Journals; Emerald; Chicago Journals; Assist Journals Wiley Interscience; Ingenta Journals; Springerlink Journals; Informaworld Journals; Science Direct.
ERIC	Majority of coverage is U.S. based including professional librarianship journals. Weakness: majority of articles in results list are opinion pieces relating practitioner experiences, very few report empirical research.
CCCU Library	Small book collection on information literacy complimented by large collection on education and research methodology. Good range of education and education research journals available. Limited number of inter-library loans allowed to Ed D students. Library holdings reflect the institution's core curricula which does not include librarianship.
British Library Research Reports series	Information Research Reports and the Research and Development Reports represent an investment made into the research of librarianship issues including school librarianship from the 1970s to the 1990s. These are a source of empirical work and although dated in production, many are still relevant in content. Authors were leading thinkers in their fields.
Bibliographies and citations listed in books and journal articles.	Tracing these for further reading enabled study of sources used by leading writers in the field and further identified key journal titles covering information literacy research.
Professional associations e.g. CILIP; School Library Association; International Association of School Libraries etc.	Membership provides access to the journals of these organisations. School Libraries Worldwide is an international peer reviewed journal and information literacy is a frequent theme for publication.

Table: Bibliographic sources with their strengths and weaknesses in relation to this research.

Criteria for inclusion and exclusion

Time period: A start date was not chosen, information literacy literature began to appear just before the end of the 1970s; items of significant influence such as the works of Bloom and Krathwohl (1956) or Stenhouse (1975) were included. 2010 was the point at which the main literature collection ended, but checks were made during the other stages of the research for significant items and some further works were included (e.g. Todd, Gordon and Lu 2011).

Language: English

Geographical Scope: Initially I collected items to read, regardless of origin, but in 2010 it was clear that the hundreds of items outweighed the limitations of this thesis, so a process of filtering began. The research setting is in England, so items of influence to school library practice in England and Wales were grouped together. There are several leading thinkers in the field of information literacy whose work has significance for our region so regardless of origin their work has been included.

Items were included because they contributed:

- a chronological picture of information literacy models, frameworks, significant landmarks created by national/international organisation statements that affected school libraries in England and Wales
- significant reviews of the topic (Bawden 2001; Beetham, McGill and Littlejohn 2009)
- significant works on theory e.g. learning transfer theory by Perkins and Salomon (1989)
- as recommended by supervisors (e.g. Beyer 1997)
- Work selected as most influential from that writer's collection e.g. Prensky's initial item (2001) selected because it launched the 'digital native' concept which so strongly influenced subsequent writers.
- Reports of empirical work pertinent to information literacy in school libraries or in the examination of the digital native concept.
- Works that included teacher voices in its data collection in relation to information literacy.
- Significant work on librarianship theory relevant to this study e.g. cognitive authority (Wilson 1983).

Examples of exclusion:

- Filtered by sector e.g. items relating to other sectors of librarianship such as higher education libraries, primary school libraries, public libraries or other types of workplaces such as fire services and nursing were removed to make the size of the literature manageable.

- Items not pertinent to the research questions e.g. management and evaluation of school libraries; information seeking behaviour studies.
- Reviews of the literature useful as search checkpoints but do not contribute directly to this discussion.
- Conceptual papers on information literacy that either were higher education relevant rather than school libraries or whose work did not express an extra layer of thinking affecting school library practice in England and Wales. For instance: Kapitzke, C. (2003) Information literacy: a positivist epistemology and a politics of outformation. *Educational theory*. 53 (1), pp37-53.; which although interesting to read, its concept of hyperliteracy has not gained ground here with practitioners and other works supporting the net generation concept were already represented in the review.
- Papers examining other research methodologies in librarianship e.g. sense-making as not relevant to the focus of this study.
- Digital literacy articles that focussed on the digital divide between rich and poor as this was outside the boundaries of this study.

Appendix Five

Evaluation of Potential Interviewees in Relation to Information Literacy Work in the Library						
Teacher	Subject	Strong collaboration links	Weak collaboration links	Strong information literacy roots	Weak information literacy roots	Other points for consideration + joint work
1	P.E.		✓		✓	Headteacher
2	English	✓		✓		Long I.L. experience
3	Science		✓		✓	Done some A level work together
4	English		✓		✓	Gifted +Talented projects
5	Science		✓		✓	Done some GCSE work together
6	Science	✓		✓		Worked closely on teaching and learning group
7	Maths		✓		✓	
8	Politics		✓		✓	Long experience as a sixth form teachers
9	Economics		✓		✓	
10	Maths	✓			✓	Small amount of A level work together. Poetry Jam project.
11	BTEC		✓		✓	
12	Maths	✓			✓	Puzzle Club
13	Maths	✓			✓	Peer coach experience
14	Maths		✓		✓	Developed PLTs maths' work
15	Maths		✓		✓	
16	Maths		✓		✓	
17	Maths		✓		✓	
18	Maths		✓		✓	
19	Maths		✓		✓	
20	Maths		✓		✓	NQT
21	Performing Arts	✓		✓		Joint A level and GCSE projects + Creative partnerships
22	Art	✓			✓	Growing partnership
23	Art		✓		✓	Some GCSE work
24	Art		✓		✓	Some GCSE work

25	Music		✓		✓	Musical futures
26	Music	✓			✓	Musical futures and Creative partnerships
27	Music		✓		✓	Musical futures
28	Music	✓		✓		Some GCSE work
29	Dance		✓		✓	
30	Dance	✓			✓	Creative Partnerships
31	Drama	✓		✓		Some A level work
32	Drama	✓		✓		LIFT Archive project
33	Science		✓		✓	
34	Science		✓		✓	
35	Science	✓		✓		Some joint projects
36	Science	✓		✓		Some joint projects + leads on developing PLTs in Science
37	Science		✓		✓	
38	Science		✓		✓	
39	Science		✓		✓	Small amount of GCSE work
40	Science		✓		✓	
41	Science	✓		✓		Some GCSE work + Creative partnerships
42	Science		✓		✓	
43	Science		✓		✓	NQT
44	MFL		✓		✓	Peer Coaching
45	MFL		✓		✓	
46	MFL		✓		✓	
47	MFL	✓			✓	Creative partnerships
48	MFL		✓		✓	
49	MFL		✓		✓	NQT
50	MFL		✓		✓	
51	Liberal Studies		✓		✓	Some GCSE work
52	History		✓		✓	
53	Geography		✓		✓	

54	Liberal Studies		✓		✓	NQT
55	R.E.	✓		✓		Joint research experience
56	R.E.		✓		✓	
57	Liberal Studies		✓		✓	
58	R.E.	✓		✓		Joint A level work
59	History	✓		✓		Long I.L. experience
60	R.E.		✓		✓	
61	History		✓		✓	Some joint A level work and long experience
62	D&T	✓		✓		Peer Coaching
63	D&T	✓			✓	Long experience
64	D&T		✓		✓	Some joint GCSE work
65	D&T	✓			✓	Some joint GCSE work + Creative partnerships
66	D&T		✓		✓	
67	P.E.		✓		✓	
68	P.E.	✓			✓	Peer Coaching + Creative partnerships
69	P.E.	✓			✓	Reading project
70	P.E.		✓		✓	
71	P.E.		✓		✓	
72	P.E.		✓		✓	
73	English		✓		✓	
74	English		✓		✓	
75	English		✓		✓	
76	English		✓		✓	
77	English	✓			✓	Peer Coaching + Creative partnerships
78	English		✓		✓	
79	English		✓		✓	
80	Media		✓		✓	

81	English		✓		✓	
82	English	✓		✓		Joint projects + long experience
83	English		✓		✓	
84	English		✓		✓	
85	English		✓		✓	
86	Business Studies		✓		✓	
87	Business Studies		✓		✓	
88	I.C.T.		✓		✓	Long experience
89	I.C.T.	✓		✓		Joint A level and GCSE work
90	Learning support		✓		✓	
91	Learning support		✓		✓	Creative partnerships
92	Learning support		✓		✓	
93	Learning support		✓		✓	
94	Learning support		✓		✓	
95	Learning support		✓		✓	
96	Learning support		✓		✓	
97	PSHE	✓			✓	LGBT work
98	PSHE	✓		✓		Creative partnerships
99	EAL		✓		✓	
100	PSHE		✓		✓	

Green denotes Senior Leadership Team, Plum denotes Sixth form leadership team and Blue denotes Head of Department.

Appendix Six

Information Literacy

How do you use information in your everyday life and work?

Tell the story of a time when you used information effectively

Describe your picture of an effective information user, or information literate person.

Describe your experience of being an information literate person

How has the technology of this new building impacted on your teaching?

How would you explain to a new student how to find information and take notes?

How might we encourage...

How do students conceive of information literacy in new ways?

How can we encourage students to focus not on I.T. but on information use?

How should the categories be valued in different contexts?

How can categories that are less well represented in teaching be better emphasized?

How can we influence students' ways of thinking about information literacy?

Collaboration

What part does collaboration play in your work?

Can you describe an experience where this was very effective?

- And what made it so?
- Impact on learning?

Can you describe an experience where it was very ineffective?

- And what made it so?
- Impact on learning?

What would you say is the difference between co-operation and collaboration?

Is there something that could be changed about how schools work in order to improve the nature of collaborative work?

Learning

Diagram? River of cards? Diamond 9? Features with weak to strong boxes?

Appendix Seven

Pre-trial of question schedule:

January 2009

Opening Question will be tailored to that individual person e.g. WLO – during your presentation to middle managers about the new curriculum you said ‘in fact it has moved too much towards skills and the subject content is not there enough, so you have to slow it down’... can you explain that a little bit more for me please?

What has been your experience of collaboration?

KPH: *Might need to give examples: other teachers, departments, library, other professionals...*

DRS: Do you mean a positive example? What I have done with other people? This might depend upon my *positive or negative approach to work...*

Why bring a class to the library?

KPH: Straightforward.

DRS: Might be about what they could perceive it is for or what they actually do in it?

What has been your experience of libraries?

Of research?

Own study skills?

Own ability to learn?

Own sense of meta-awareness?

DRS: This might be Do you research for teaching? Could be interesting. Do they do it for professional *development then confront...*

Learning theory – what do you believe?

Giving example statements to represent each one and asking them to identify themselves.

DRS: *What if they don't fit into any single one?*

‘Leaders of learning’ concept from government policy – what is your response to that idea?

KPH: Overlap with question 2 in terms of collaboration. It has brought problems e.g. invigilation – subject teacher can intervene and help students in a much more effective way, give guidance that clerical invigilators *cannot do... do not agree to do... very problematic.*

DRS: To associate this phrase with clerical tasks and the alleviation of teacher workload could be considered insulting.

Inspiration – where do you draw yours from?

KPH: Depends upon who you are trying to reach?

DRS: Other members of staff – could get some interesting answers.

Meta-awareness as a teacher do you have a sense of your developing skills/practice?

KPH: Think about blocks and flows for this. Opportunities for reflection. Depends upon engagement and teaching level.

DRS: Could be Do you feel FHS helps you do that?

Carol Webb – Ed. D. pre-trial notes.

Appendix Eight

Title: How can one raise information literacy levels in a secondary school?

Q. Information literacy – can you say what you understand by the term?

Prompts – for you is it about finding information?

- Selecting for relevance?
- Being able to make sense of information?
- Using information in response to a particular question or problem?.

Using the interviewee's definition of the term ask

Q. Can you describe an experience where you have worked to develop this with your students?

- Did you have any thoughts or ideas or conclusions at that time?
- How did that help you?
- Was this a problem for you in anyway?

Key Q: What does it mean to be information literate and is it changing in the new technological age?

Q. Given a choice how would you organise information-seeking activities for your students?

Q. How has technology affected the content of your subject?

Q. How has the new technology in school impacted on the way you work with students?

Title: How can one raise information literacy levels in a secondary school?

Key Q: How can librarians and teachers work together to raise information literacy?

Q. Is there something that could be changed about how schools work in order to improve the nature of collaborative work?

Q. Can you describe a collaborative work experience with another colleague?

- Impact on learning? Yours? Student?
- Did you have any thoughts or ideas or conclusions at that time?
- Did you have any feelings or emotions at this time?
- Did that help you?
- Was that a problem for you?

Sub Q: What is the understanding among teachers of the importance of information literacy and of the role that librarians can perform in the teaching and learning of this subject?

Q. How is information literacy important in your subject area?

Q. How do you define the role of librarian in this area of teaching and learning for information literacy?

Q. Is there anything you would like to add about the role of librarian in a school?

Sub Q: What is the role of the librarian in raising information literacy levels in the school for both teachers and students?

Q. Reflecting on our work together in this school can you identify how the librarian's contribution has affected your thinking and practice?

Appendix Nine

9th May 2010 – Interview Schedule – post-feedback from LRARG

Neutrality of question style needs to be achieved.

Important to establish through the literature review and with previous research evidence why effort should be put into looking at the issue of information literacy. If so, then find out how. What does the literature say? Research question evolving from How can **one** raise information literacy levels in a secondary school? to How can **we** raise information literacy levels in a secondary school? Sounds more inclusive, immediate and dynamic.

Framework needed at outset of interview –

1. Have you heard of the term information literacy?

No answer – If I present a broad definition can you see if there are things that are relevant to your subject or indeed irrelevant?

Then go to Q. 6.

Yes answer – lots of meanings...

2. What does it mean to you?
3. Using this range of skills we have mentioned can you describe an experience where you have worked to develop this with your students?

To obtain critical incident data.

Possible prompts: Did you have any thoughts or ideas or conclusions at that time?
How did that help you?

4. What were the problems involved?

Prompts: for student learning?

5. Why did you choose to do it that way?
6. Which of these do you set out to develop in your subject context?

Possible prompt: Interesting how frequently are you able to...

7. Has technology affected your subject, if so, how?

Yes answer: Does that effect the range of what is taught?... the teaching of your subject?

No answer: go to Q.8.

8. Has the new technology in school impacted on the way you work with students?

Prompts:

Q. In classroom delivery the interactive whiteboard and access to Fronter (VLE)?

Q. In terms of subject content and how you teach has access to the internet and social learning tools affected this?

9. Do you think technology has changed how students learn?

Prompts: Motivation

Interaction with each other

Skills

10. Where does that leave information literacy as we talked about earlier?

Use narrative to link to the next section:

You have told me what you do at the moment and how you do it can we go on to look at how we can enhance that process?

10. Open style question: What would you like to see to help you with this process?

11. Or What would you like to do differently?

If working with the librarian is mentioned then follow with Q.12.

If no mention is made of working with the librarian, go to Q.15 and say Some of the literature I have looked at mentions collaboration with other colleagues in this process.

12. Can you tell me about the role of librarians in a school?

13. How can we work more closely?

Prompts: barriers?

14. Is there something that could be changed in school in order to improve the nature of collaborative work?

Prompts: Mechanisms like time, meeting structures (Now go to Q.17)

15. Do you think there is a role for the librarian in this area of teaching and learning for information literacy?

16. What are the barriers to this working?

17. Can you describe a collaborative work experience with another colleague? (To obtain critical incident data)

Prompts: Did this impact on learning – yours? Students?

Did you have any thoughts or ideas or conclusions at that time?

Did that help you?

Were there any problems?

18. Do you think this kind of collaboration could work with the librarian?

Prompts: What might this look like?

Q.19 and 20 for those who have history of collaboration with the librarian:

19. We have collaborated n a range of projects... what for you has been the nature of that collaboration and has it contributed to your thinking or practice?

20. Can this influence collaboration on information literacy in the future?

This question for all:

21. If you school had no library what difference would it make to your teaching?

Appendix Ten

Pilot Interview Schedule

I have been studying information literacy in schools and this research is looking at: how can we raise information literacy levels and what part collaboration between colleagues can play.

1. Have you heard of the term information literacy?

No answer →

Yes answer



2. What does it mean to you?
3. Using this range of skills we have mentioned can you describe an experience where you have worked to develop this with your students?

Prompts:

- How frequently are you able to...
- Did you have any thoughts, ideas or conclusions at that time?

4. What were the problems involved?

Prompts:

- for student learning?

5. Has technology affected your subject, if so, how?

Yes answer:

- Does it effect the range of what is taught?
- How the subject is taught?

No answer: go to Q.8

If I present a broad definition can you see if there are things that are relevant to your subject or indeed irrelevant?

(Present separate sheet with range of definitions)

Then go to Q.3

6. Has the new technology in school impacted on the way you work with students?

Prompts:

- In classroom delivery do you use the interactive whiteboard,
- access to Fronter (VLE),
- the laptops?

7. Has access to the internet affected the subject content and how you teach it?

Prompts: Social learning tools e.g. blogs

8. Do you think technology has changed how students learn?

Prompts:

- their motivation?
- What about their interaction with each other?
- Any other behaviour differences?
- Any changes in skills that you have observed?

9. Where does that leave information literacy as we talked about earlier?

Use narrative to link to the next section:

You have told me what you do at the moment and how you do it can we go on to look at ways to enhance that process?

10. What would you like to see to help you with this process?

Some of the literature I have looked at mentions collaboration with other colleagues as a way of enhancing this process.

11. Can you describe a collaborative work experience with another colleague?

Prompts:

- Did this impact on learning – yours? Students?
- Did you have any thoughts or ideas or conclusions at that time?
- Were there any problems?

12. Do you think this kind of collaboration could work with the librarian?

13. Is there something that could be changed in school in order to improve the nature of collaborative work?

Prompts:

- Mechanisms like time,
- meeting structures

14. Is there a role for the librarian in teaching and learning for information literacy?

15. What are the barriers to this?

Q.15 and 16 for those who have history of collaboration with the librarian:

16. We have collaborated on some projects... what for you has been the nature of that collaboration?

17. How might this influence collaboration on information literacy in the future?

This question for all:

18. If the school had no library, what difference would it make to your teaching?

Appendix Eleven

Interview Schedule

I have been studying information literacy in schools and this research is looking at: how can we raise information literacy levels and what part collaboration between colleagues can play.

1. Have you heard of the term information literacy?

No answer →

Yes answer



2. What does it mean to you?
3. Using this range of skills we have mentioned can you describe an experience where you have worked to develop this with your students?

Prompts:

- How frequently are you able to...
- Did you have any thoughts, ideas or conclusions at that time?

4. What were the problems involved?

Prompts:

- for student learning?

5. Has technology affected your subject, if so, how?

Yes answer:

- Does it effect the range of what is taught?
- How the subject is taught?

No answer: go to Q.8

If I present a broad definition can you see if there are things that are relevant to your subject or indeed irrelevant?

(Present separate sheet with diagrams + text)

Then go to Q.3

6. Has the new technology in school impacted on the way you work with students?

Prompts:

- In classroom delivery do you use the interactive whiteboard,
- access to Fronter (VLE),
- the laptops?

7. Has access to the internet affected the subject content and how you teach it?

Prompts: Social learning tools e.g. blogs

8. Do you think technology has changed how students learn?

Prompts:

- their motivation?
- What about their interaction with each other?
- Any other behaviour differences?
- Any changes in skills that you have observed?

9. Where does that leave information literacy as we talked about earlier?

Use narrative to link to the next section:

You have told me what you do at the moment and how you do it can we go on to look at ways to enhance that process?

10. What would you like to see to help you with this process?

Some of the literature I have looked at mentions collaboration with other colleagues as a way of enhancing this process.

11. Can you describe a collaborative work experience with another colleague?

Prompts:

- Did this impact on learning – yours? Students?
- Did you have any thoughts or ideas or conclusions at that time?
- Were there any problems?

12. Do you think this kind of collaboration could work with the librarian?

13. Is there something that could be changed in school in order to improve the nature of collaborative work?

Prompts:

- Mechanisms like time,
- meeting structures

14. Is there a role for the librarian in teaching and learning for information literacy?

15. What are the barriers to this?

Q.15 and 16 for those who have history of collaboration with the librarian:

16. We have collaborated on some projects... what for you has been the nature of that collaboration?

17. How might this influence collaboration on information literacy in the future?

This question for all:

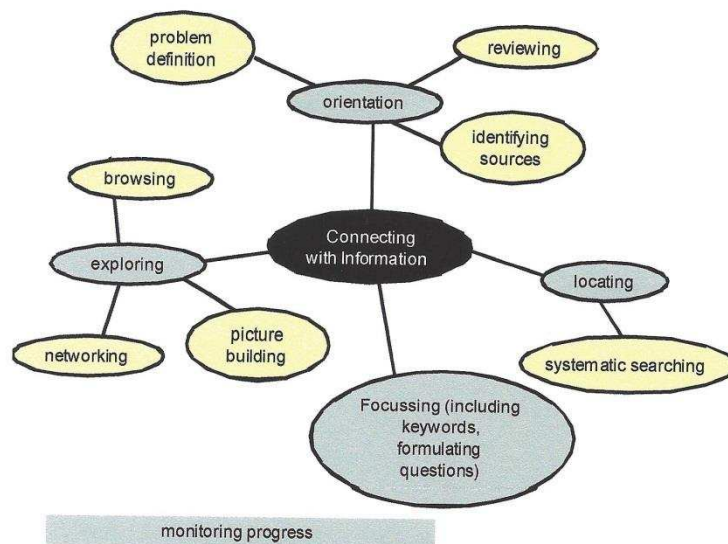
18. If the school had no library, what difference would it make to your teaching?

Appendix Twelve

Connecting with information

- Reviewing existing knowledge and gaps
- Problem definition: focus and boundaries
- Picture building: exploring, mapping the scene and gaining an overview
- Browsing (purposeful and serendipity)
- Networking
- Identifying sources
- Locating sources and information
- Focusing (including identifying keywords and formulating questions)
- Systematic searching
- Monitoring progress

Figure 2: Connecting with information

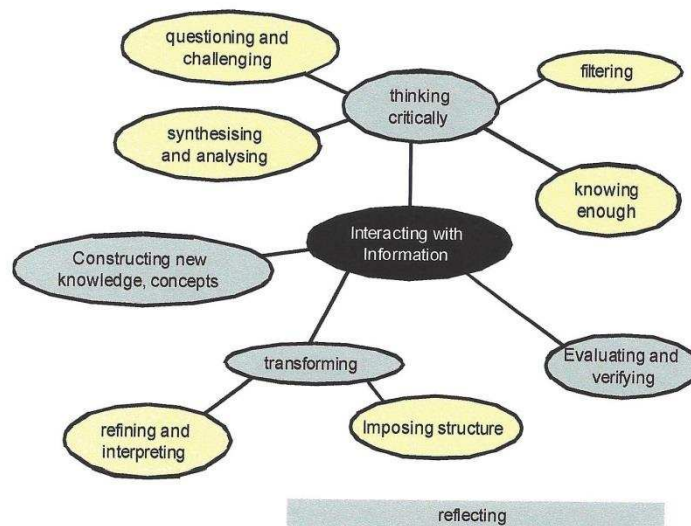


Markless, S. and Streatfield, D. (2007) 'Three decades of information literacy: redefining the parameters', in Andretta, S. (ed.) Change and challenge: information literacy for the 21st century. Adelaide: Auslib Press.

Interacting with information (creating the personal or group perspective and position)

- Questioning and challenging the information
- Evaluating and verifying
- Filtering
- Refining and interpreting (fitness for purpose)
- Synthesising and analysing
- Constructing new concepts, knowledge, arguments
- 'Knowing enough' (is more information necessary?)
- Imposing structure to make sense of information
- Reflecting

Figure 3: Interacting with information

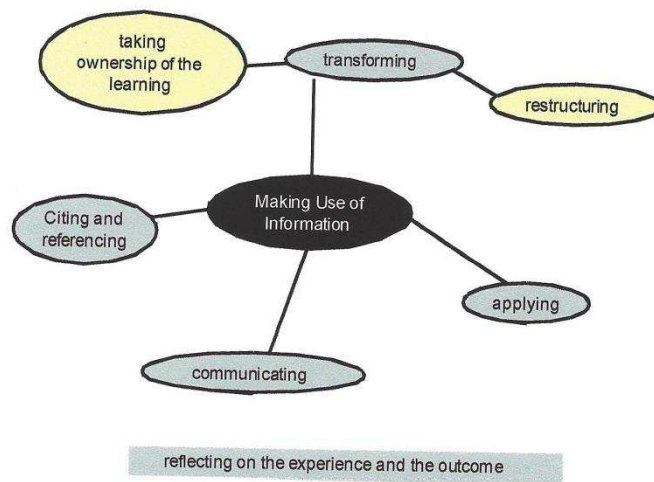


Markless, S. and Streatfield, D. (2007) 'Three decades of information literacy: redefining the parameters', in Andretta, S. (ed.) Change and challenge: information literacy for the 21st century. Adelaide: Auslib Press.

Making use of information

- Taking ownership of what has been learnt by expressing its complexity and richness, using appropriate media
- Communicating in an appropriate variety of formats
- Citing and referencing appropriately
- Applying information when problem-solving, decision making and in critical thinking
- Restructuring information for different purposes (including transforming information into different media)
- Reflecting on the process and the product

Figure 4: Making use of information



We are now seeking to field-test and adapt this framework in a variety of HE settings, exploring some of the implications of recent information literacy research in practice, before a more developed version is offered.

Acknowledgement:

The new information literacy framework presented above has been adapted from two earlier Models developed by Dr Allen Foster (University of Wales, Aberystwyth) and by Prof. Ross Todd (Rutgers, the State University of New Jersey).

Markless, S. and Streatfield, D. (2007) 'Three decades of information literacy: redefining the parameters', in Andretta, S. (ed.) Change and challenge: information literacy for the 21st century. Adelaide: Auslib Press.

Appendix Thirteen

**Four box grid to illustrate
reasons for collaboration**

Colour indicates participation.

Information Literacy	Creative partnerships
Peer Coaching	Other

2 - English

Information Literacy	Creative partnerships
Peer Coaching	Other long-time Library line manager, Deputy Head, English teacher and collaborated on many projects over the years.

6 - Science

Information Literacy	Creative partnerships
Peer Coaching	Other Work together in the Teaching and learning group.

10 - Mathematics

<p>Information Literacy</p>	<p>Creative partnerships</p>
<p>Peer Coaching</p>	<p>Other</p> <p>Organise half-termly Poetry Jams together</p>

22 – Performing Arts

<p>Information Literacy</p>	<p>Creative partnerships</p>
<p>Peer Coaching</p>	<p>Other</p> <p>Work together in the Teaching and learning group and on many projects over the years.</p>

23 - Art

Information Literacy	Creative partnerships
Peer Coaching	Other

26 - Music

<p>Information Literacy</p>	<p>Creative partnerships</p>
<p>Peer Coaching</p>	<p>Other</p> <p>Work together in the Teaching and learning group.</p>

28 - Music

Information Literacy	Creative partnerships
Peer Coaching	Other

30 - Dance

Information Literacy	Creative partnerships
Peer Coaching	Other

31 - Drama

Information Literacy	Creative partnerships
Peer Coaching	Other

32 - Drama

Information Literacy	Creative partnerships
Peer Coaching	Other London International Festival of Theatre Archive project.

39 - Science

Information Literacy	Creative partnerships
Peer Coaching	Other

36 - Science

Information Literacy	Creative partnerships
Peer Coaching	Other Leads development of personal learning and thinking skills curriculum in Science.

41 - Science

<p>Information Literacy</p>	<p>Creative partnerships</p>
<p>Peer Coaching</p>	<p>Other</p> <p>Work together in the Teaching and learning group.</p>

47 – M.F.L.

<p>Information Literacy</p>	<p>Creative partnerships</p>
<p>Peer Coaching</p>	<p>Other Work together in the Teaching and learning group.</p>

55 – R.E.

Information Literacy	Creative partnerships
Peer Coaching	Other Work together in the Teaching and learning group and on previous sixth-form research.

58 – R.E.

Information Literacy	Creative partnerships
Peer Coaching	Other

59 - History

Information Literacy	Creative partnerships
Peer Coaching	Other

62 – D&T

Information Literacy	Creative partnerships
Peer Coaching	Other Work together in the Teaching and learning group.

63 – D&T

<p>Information Literacy</p>	<p>Creative partnerships</p>
<p>Peer Coaching</p>	<p>Other</p> <p>Work together in reading lessons for many years and has long career in teaching.</p>

65 – D&T

Information Literacy	Creative partnerships
Peer Coaching	Other

68 – P.E.

<p>Information Literacy</p>	<p>Creative partnerships</p>
<p>Peer Coaching</p>	<p>Other Work together in the Teaching and learning group.</p>

69 – P.E.

<p>Information Literacy</p>	<p>Creative partnerships</p>
<p>Peer Coaching</p>	<p>Other Work together on Year 8 reading Challenge</p>

76 - English

Information Literacy	Creative partnerships
Peer Coaching	Other

82 - English

<p>Information Literacy</p>	<p>Creative partnerships</p>
<p>Peer Coaching</p>	<p>Other</p> <p>Worked together for many years in reading lessons.</p>

97 - PSHE

<p>Information Literacy</p>	<p>Creative partnerships</p>
<p>Peer Coaching</p>	<p>Other Worked together on LGBT project.</p>

77 - English

Information Literacy	Creative partnerships
Peer Coaching	Other

74 - English

<p>Information Literacy</p>	<p>Creative partnerships</p>
<p>Peer Coaching</p>	<p>Other</p> <p>2ic KS3 English joint work on reading lesson plans and author events</p>

12 - Maths

<p>Information Literacy</p>	<p>Creative partnerships</p>
<p>Peer Coaching</p>	<p>Other</p> <p>Manage Maths Puzzle Club together and worked in the same TLC group.</p>

Appendix Fourteen

Learning Resources Action Research Group
Reflections on Teacher B transcript – Autumn 2011

It was very difficult for others to understand the reasons for the path taken by the interview, where there are digressions etc., without knowing the social and political context of each interview. There was a lot of discussion of this teacher's identification of students' inability to do something but then apparent failure to address this in the teaching described. In this interview with Teacher B I felt I was making more comments, as reassurance and encouragement, more so, than I have done with others. It was hard to stand back and simply be an interviewer. I think in the later interviews, I was more relaxed and waited longer for the teacher to respond, before jumping in with a comment or prompt.

Appendix Fifteen

Second Coding of Statements

The image shows a large grid of handwritten notes on a grid paper. The grid is filled with small, organized notes, many of which are highlighted in green, blue, orange, and pink. To the right of the grid, there is a handwritten summary in blue and green ink. The summary includes the following text:

at does it mean to be
o. lit. and is it
• arising in the new
technological age?
ins from interview
view data it means that
data Ant T. ...
Use lit. to establish
+ triangulate
KSS data
can librarians + Ts. work
to review info. li
? • What do the dependent papers
bring to the process?
= to identify ped
interview data + r
research
SS

The grid itself contains numerous small notes, some of which are highlighted in green, blue, orange, and pink. The notes appear to be organized into columns and rows, with some larger blocks of text and some smaller, more concise notes. The overall appearance is that of a detailed research or coding process.