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Year 7 Students, Information Literacy, and Transfer: A Grounded Theory

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This study examined the views of year 7 students, teacher librarians, and teachers in three state secondary schools in rural New South Wales, Australia, on information literacy and transfer. The aims of the study included the development of a grounded theory in relation to information literacy and transfer in these schools. The study's perspective was sociocultural, and grounded theory was adopted as the method. This paper presents a critical evaluation of the advantages and limitations of grounded theory. The key findings of the study are outlined and discussed. The findings are related to the extent to which students valued information literacy practices and the factors involved in determining whether students were likely to transfer information literacy practices across time and school subjects. The study identified three groups of students: (1) a minority, who were engaged in their own learning, valued information literacy practices, and were likely to transfer these practices; (2) a majority, who could potentially be engaged in their own learning and who valued information literacy practices in principle, but were unlikely to transfer these practices without intervention by a teacher or teacher librarian; and (3) a very small minority, who failed to grasp the concepts of learning or information literacy practices and could not transfer such practices. The study also found that the lack of a culture of transfer in the schools was a significant hindrance in developing students as transferrers. The findings are discussed and a grounded theory of information literacy and transfer is presented.

Introduction

Despite a substantial growth in both research and professional literature on the topic of information literacy, the question of whether school students transfer information literacy practices has not been considered in any depth within this literature. In the field of school library media, studies of information literacy teaching, information literacy models, and students' attitudes to information literacy appear to have assumed that students will transfer information literacy practices. Evidence of transfer or lack of transfer in schools is largely anecdotal, and there is clearly a gap in information literacy research. This author sought to fill that gap. This article presents the aims of the study and its key findings, including the development of theoretical categories, which were tested using theoretical sampling (Charmaz 2006). The findings are discussed, providing an interpretation of the data gathered and a comparison with the findings of this study with existing literature on information literacy and transfer in schools. The grounded theory is then presented.

The term *information literacy practices* is favored here over the more limited term *information literacy skills*. Lloyd (2007, 2010) argues that information literacy can be viewed as a practice as opposed to a set of skills. The term *practice*, in the school context, implies that students engage in a range of information-related learning activities, with a focus on students gaining new knowledge, and that students are reflective practitioners. That is, students are not merely using a set of skills (e.g., information retrieval or information evaluation) mechanically, and students do not view these skills in the same way as they might view computer skills.

Aims

This study examined a range of complex issues relating to information literacy practices and transfer, with the focus being on year 7 students in three state secondary schools in rural New South Wales, Australia. The aims of the study were to

- examine and interpret these students' views on and use of a range of information literacy practices;
 - examine and interpret these students' views on the extent to which they transferred information literacy practices across time and across subjects;
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- examine and interpret the views of teacher librarians and teachers in these schools on information literacy practices and transfer; and
- develop a grounded theory relating to the above.

Literature Review

Library Skills to Information Skills to Information Literacy in Schools—A Historical Review

From a review of the literature, it would appear that the term *information skills* was not used until the 1980s; *library skills* appears to be the most common term used before then, although *study skills* was used from the late 1960s. In relation to teaching skills and developing positive attributes among students as library users, the term *library instruction* was most often used before the 1970s.

While the emphasis on the use of the library and its resources was most common before the 1970s, many authors referenced more than basic library skills and discussed aspects such as information evaluation and note taking (Fargo 1939; Douglas 1949; Grimshaw 1952; Gardiner 1954). The 1960s saw more emphasis on students' use of more cognitive skills, such as book content evaluation, but still the predominant view was that students needed to be taught library skills (Leyland 1961; Rossof 1961; Brown 1963; Cheshire 1966; Delaney 1968). An exception in the 1960s is Henne (1960), who argued that, while library skills were important, students should be able to evaluate what they read. The literature of the 1960s evidenced a growing realization that students may need more than locational skills to be effective library users (Cheshire 1966; Freund 1966; Cleary 1966; Davies 1969). In 1969, the American Library Association and the National Education Association published *Standards for School Media Programs*, which was viewed as a major step in developing information skills in school libraries. In the 1970s, the trend toward including a wider range of skills than basic library skills continued (Polette 1973; Herring 1978). In the United Kingdom, Beswick's (1977) influential work placed what he termed *library research skills* in the context of resource-based learning.

In the 1980s, the term *information skills* became the accepted term and a key influence in this acceptance was Marland's 1981 report, which identified nine key questions students should ask, and linked these to skills students would use. It is interesting to note here that two highly quoted researchers, Stripling and Pitts (1988) preferred the term *research skills*, although this term included many of the cognitive elements of information skills, such as identifying purpose, posing questions, and evaluating information resources.

The 1980s also saw publications by two key authors, Irving and Kuhlthau. In the United Kingdom, Irving stated that "study skills are those which are associated with the acquisition and use of information in the pursuit of knowledge. Most of the skills are related to ways of thinking" (1983, 3). Kuhlthau (1987) argued that information literacy, a combination of information skills and computer literacy, should be a key element of any school library media program. In the schools' context, this is one of the first uses of the term *information literacy*.

Thus it can be seen that by the 1990s the wider concept of information literacy had been introduced, although the use of the term *information skills* was very prevalent in the school-related literature (e.g., Eisenberg and Berkowitz 1990; Herring 1996; Small 1998). Key publications relating to information literacy in schools in the 1990s included Doyle's (1994) overview of information literacy in society; Kuhlthau's (1993) influential *Seeking Meaning*; the American Association of School Librarians and Association for Educational Communications and Technology's (1998) *Information Power*, which declared that information literacy should be a central plank in the mission of any school library; and the Australian School Library Association's (1993) *Learning for the Future*, which identified information literacy as a key concern for teacher librarians in Australia. Information literacy was therefore accepted as the term to be used in schools by the 1990s.

In the past twenty years, the term *information literacy* has been much debated, and the twenty-first century has seen the development of terms such as *computer literacy*, *digital literacy*, and *media literacy*. These terms have often been accompanied by the word *skills*. As stated above, this author prefers the term *practices* and takes the view that the other literacies may be viewed as a subset of the encompassing term *information literacy*.

Definitions of Information Literacy

The professional literature lacks one accepted definition of information literacy in schools, which reveals evidence of some contradictory understandings of what constitutes information literacy or what attributes the information-literate student might have.

Langford stated “Is it [information literacy] a concept or a process?” (1998, 59). Doyle’s definition was “focused on the attributes of one who is information literate,” and defined a person who is information literate as someone who “recognises that accurate and complete information is the basis for intelligent decision making; [and] recognises the need for information” (1994, 2–3). While Doyle’s often-quoted definition is a starting place in defining information literacy in the school context, it can be seen as limited. For example, while a student might recognize the “need for information,” this need would have to be defined in terms of a clear purpose if recognition is to be of value.

The AASL and AECT’s (1998) definition of information literacy is comprehensive when taken with the standards and the indicators, but it can be viewed as being too all-encompassing. It can be argued that a person can be information literate but have little appreciation of literature. The standards’ definition also can be seen as culturally biased because it assumes that information-literate people will favor democracy, and this is a questionable assumption. The 1998 standards were updated by the AASL; the new standards (AASL 2007) also focus on information literacy, but they attempt to define an information-literate person.

Abilock also took a wide view of information literacy, arguing that “information literacy is a transformational process in which the learner needs to find, understand, evaluate, and use information in various forms to create for personal, social or global purposes” (2004, 1). Herring and Tarter (2007) introduced the notion of transfer, which is not found in other definitions. Williams (2001) was critical of definitions of information literacy because they did not focus on student learning. Limberg urged educators in schools to change their attitude toward information literacy teaching and argued that information literacy teaching in schools should be aimed at “students developing a *repertoire* of understandings of information seeking and use” and not merely at students learning a process (2005, 47).

It is clear that no one definition of information literacy will encompass all aspects of this complex concept. For this researcher, information literacy is a critical and reflective ability to exploit the current information environment and to adapt to new information environments. It also is a practice. It can be seen as a critical ability in that, before students can effectively use information literacy practices in their current information environment, they must have the ability to think critically about *why* they might use the practices, *how* they might use the practices, and *whether* they might use these practices in the future. It can be seen as a reflective ability in that students also need to think about information literacy practices in relation to their own learning style, that is, take a metacognitive view. Information literacy as a practice can be viewed in the students’ application of information literacy in the context of their own information environments.

Information Literacy Research

While the literature on information literacy in schools is large and growing, much of the writing on information literacy, while informative and of use in context, is not based on empirical research. This section seeks to review key studies in information literacy research, which informed the present study, by critically reviewing existing research’s findings and methods.

Kuhlthau’s Research

In the school context, the work of Kuhlthau (2004) has been the most influential and is the most quoted. Kuhlthau outlined a number of research projects carried out from the 1980s onwards. Kuhlthau’s studies broke new ground in information literacy research in the school context by examining not only how students went about finding relevant information for an assignment, with a focus on the task the students faced, but also on “thoughts, feelings, actions, strategies and mood” (37). A criticism of Kuhlthau’s work is that there is little focus on the transfer of information literacy practices.

Students’ Information Seeking

As was noted above, the term *information search process* referred to by authors such as Kuhlthau (2004) is often used to mean a wider process than using resources to find relevant information. Studies of information seeking by students in schools have examined students’ strategies when using print or digital resources. Alexandersson and Limberg (2003), who take a sociocultural perspective, found that students’ information seeking often focussed on gathering facts rather than on

deep learning. Limberg et al. (2008) argued for focusing more on learning goals and meaningful learning for students rather than the more common information-skills approach. Branch (2001), Chelton and Cool (2004), and Gross (2004) have all indicated that many students were not effective information seekers.

Bilal (2004) and Bilal, Sarangthem, and Bachir (2008) examined information seeking in digital libraries, and their conclusions reflected Kuhlthau's (2004) findings on uncertainty and satisfaction in relation to information seeking. Chung and Neuman (2007) studied high school students' approaches to information retrieval and concluded that eleventh-grade students' understanding of topics increased during information seeking. Myers, Nathan, and Saxton (2006) examined barriers to information seeking in school libraries, and these barriers included insufficient collaboration between students and a lack of focus by students on their previous information-seeking activities.

Although they focus on different areas of research, the above studies on information seeking, taken as a whole, demonstrate the difficulties faced by students in seeking relevant information.

Other Information Literacy Research

In relation to information literacy models, Wolf (2003) conducted a case study of the use of the Big Six information skills model (Eisenberg and Berkowitz 1990) and examined the model as a potential metacognitive tool. Wolf found that students who used the Big Six model had a higher level of engagement with not only the content of their learning, but also with the process of completing the assignment.

Empirical studies of the use of the PLUS model (Herring 1996, 2004, 2011) have been conducted by Herring, Tarter, and Naylor (2000, 2002) and Herring (2006). These studies demonstrated that students favored the use of the model because it helped them in identifying existing knowledge, searching for information, forming questions, and being organized in their approach to completing an assignment. A minority of students, Herring et al. (2000) stated, preferred to use their own approach to completing the assignment task because the PLUS model did not suit their learning style. The key findings of Herring's 2006 study were that a majority of students viewed the PLUS model as a beneficial tool, and that it enabled some students to take a metacognitive view of their understanding and application of information skills. Herring (2006) noted that the study did not examine what factors might have influenced students' views on using information resources. The views of teachers in Herring's 2006 study indicated that they saw benefits in students' use of a scaffold such as the PLUS model, and the teachers indicated that they saw evidence of students transferring information skills across levels in the school, although the evidence was anecdotal.

More recently, research by Bomar (2010) noted students' reliance on unstructured web searching and argued for an emphasis on lifelong learning as the basis for teaching information literacy. Donham (2010) argued that self-assessment by students should be encouraged in relation to students' information seeking and should influence the teaching of information literacy in schools. Hamilton (2009) focused on the use of new media and Web 2.0 tools to enhance the teaching of information literacy in schools. McGregor (2011) argued that teaching students how to synthesize would improve their information literacy practices and make them less prone to plagiarism.

In the school context, a wide range of topics can be explored by researchers in information literacy. Research on "new" literacies such as digital and media literacy (e.g., Jones-Kavalier and Flannigan 2008) add value to the debate but still need to be viewed in the wider information literacy context. There has been a distinct lack of research of information literacy and transfer schools, the exceptions being studies by Herring and Hurst (2006), Herring (2010), and Herring and Bush (2011).

Transfer

Transfer has been studied in the educational context for more than a century. There is no single agreed definition of *transfer*. Traditional definitions tend to stress repetition (Detterman 1993). Royer, Mestre, and Dufresne (2005, 83) define transfer as "a term that describes a situation where information learned at one point in time influences performance on information encountered at a later point in time," emphasising prior learning more than repetition. The most common types of transfer are near transfer, involving similar situations, and far transfer involving dissimilar situations (Haskell 2001). Haskell (2001); Fogarty and Pete (2004); and Royer, Mestre, and Dufresne (2005) argued that environmental, cognitive, and sociocultural perspectives on transfer need to be taken into account. These authors claimed that transfer was complex and influenced by many factors. A sociocultural perspective on transfer was emphasised by Volet (1999), and Royer, Mestre, and Dufresne (2005) took a similar view, identifying the need for transfer studies to account for the

influence of the wider environment (e.g., places and people). Thus, in the school context, if students are to transfer knowledge and practices, they will need to be supported by the school environment, including school staff and fellow students. Haskell (2001) argued that unless a culture of transfer existed in an educational context, transfer was unlikely to happen.

This review of the literature has attempted to highlight key issues relating to information literacy and transfer in schools and to identify some of the challenges teacher librarians and teachers still face in improving their students' information literacy practices.

Method

This critical review of the method used in the study explores the sociocultural perspective adopted by the author; constructivist grounded theory; data collection; and data analysis and interpretation.

Theoretical Perspective

The theoretical perspective of this study is a sociocultural one. Adopting this perspective implies that the researcher views learning and knowledge acquisition as being influenced by social and cultural factors. Limberg (2010) argued that

researchers adopting a sociocultural perspective of learning have highlighted social aspects and the need to focus on the situatedness of information literacy, with the research interest directed at the interaction between humans and tools for studying, teaching and learning information literacy.

This study therefore sought to take into account the environment, culture, and social interactions between staff and students in the three schools in which the study took place.

Constructivist Grounded Theory

The researcher took a constructivist grounded theory approach (Charmaz 2006). Constructivists take the view that knowledge is constructed by individuals (e.g., school students) in a social context and that researchers do not merely report research findings, but interpret the research participants' construction of reality (Pidgeon and Henwood 2004).

Grounded theory was first proposed by Glaser and Strauss in 1967. There have been several revisions of the theory since, including Strauss and Corbin (1998). Constructivist grounded theory was developed more recently, and its leading advocate is Charmaz (2006). Key aspects of constructivist grounded theory, which distinguish it from other objectivist versions (e.g., Bryant 2003), are that constructivist grounded theorists view the researcher as an interpreter of data, not a completely objective analyst of data; and that grounded theory does not emerge from the data, uninfluenced by the researcher, rather it is constructed by the researcher who interprets the data, which is gathered through active interactions with research participants. One common element of grounded theory is that there is no research hypothesis. The researcher seeks to gather data around a topic, interpret the findings as objectively as possible, and develop a theory.

In this study, the researcher followed the steps in constructivist grounded theory as recommended by Charmaz (2006). The researcher was involved in data gathering and coding at several stages. The techniques for data gathering (staff interviews and student diaries, questionnaires, and interviews) and analysis are discussed below. One feature of constructivist grounded theory that Charmaz (2006) urged researchers to adopt is memo writing. The value of memo writing lies in the opportunity it gives the researcher to constantly reflect on what has been done in the study and to consider possible areas that may need more research.

Coding is a significant feature of grounded theory. Pidgeon and Henwood (2004) note that grounded theorists adopt a range of coding methods, but the authors comment that coding in constructivist grounded theory research is used to *interpret* the statements of participants, not merely to *report* these statements. Coding is therefore not used to identify common keywords that link the participants' views, but to interpret, according to Charmaz (2006), what is happening in the data. In the present study, initial coding was done by examining the data line-by-line for each episode of data gathering. This was followed by focused coding, in which the researcher re-examined both the data and the initial codes and identified significant codes. The following is an example of initial coding from this study:

Student Diary Entry on Brainstorming	Code
Talking about tyrants. Helping them to get information. Sharing information to find out how evil the ruler.	Valuing brainstorming as a means of sharing information and ideas.

The word *valuing* is the researcher's interpretation of what is happening in the data.

These codes, developed from initial and focused coding, help form the basis of categories developed by the researcher. Theoretical coding, which helps "move your analytical story in a theoretical direction, is the final step before category formulation" (Charmaz 2006, 63). Examples of categories from this study were thinking and making connections, being engaged, using information literacy practices, and awareness of the information environment. The process of coding and recoding and further testing of coding, is referred to as constant comparison (Pidgeon and Henwood 2004), and the researcher seeks to reach a saturation point where no other codes or categories can be identified from the data. This element of grounded theory has been criticised by authors such as Dey (2004), who argue that it is difficult to decide when constant comparison should stop.

Theoretical sampling (Bryant and Charmaz 2010) is used to test the categories the researcher has developed in that hope that they will form the basis of a grounded theory. One form of theoretical sampling, which was used in the present study, is to return to the research participants (in this case school staff and students) and ask them to comment on the categories. Given no substantial difference between the views of the researcher and the participants, the categories can be viewed as sound.

The final stage of grounded theory is for the researcher to develop theory out of the relationship between the categories identified. Charmaz (2006) identified key differences between objectivist and constructivist theory development, and argued that, while objectivists sought to develop theory to test hypotheses or to make predictions from generalized findings, constructivists sought to develop theory that is interpretive in nature. The aim of constructivist grounded theory in the present study was to develop theory that focused not merely on explaining what happened in a studied environment, but on understanding what was happening in the participants' world. This choice of method is suitable given the researcher's sociocultural perspective, as the use of grounded theory allowed the researcher to consider a range of aspects of the participants' world (such as the influence of the school environment and mores) on the attitudes and beliefs of students and school staff.

Selection of Schools and Sampling

The author used convenience sampling (Patton 2002) to select schools, and the only criteria applied were that schools were secondary and high schools and that they were state schools (i.e., publicly as opposed to privately funded). This criterion was applied as much previous research on information literacy has been done in private and independent schools. Three schools agreed to take part in the study. All three schools had teacher librarians who had both teaching and librarianship qualifications. The three schools are situated in rural New South Wales, Australia. Details of the schools' student and staff population can be seen in appendix A.

In each school, one year 7 class was selected for the study. Year 7 is the first year in secondary school, and students were aged 11–12. These classes were selected using convenience sampling, that is, classes were selected because their teachers were available and willing to participate. As with the selection of schools, there was no intention to select classes on a representative basis, for example, by subject. The criterion applied was that all classes should be year 7 students of mixed ability.

Convenience sampling also was used to identify groups of students to interview. The factors that determined which students were included in the group interviews included students' willingness to participate and students' availability when the researcher was in the school. Students' availability was affected not only by their attendance or absence, but by short-term school rearrangement of sport, music, and drama rehearsals.

Given that convenience sampling (Burns 2000 and Patton 2002) was used in the study, there are limitations to the sample of classes and students chosen. For example, different results may have emerged if different classes had been selected or if different teachers had been willing or available to participate in the study. However, a grounded theory approach does not seek to generalize the findings of the study, and the use of classes in three schools allows for triangulation of results. Pidgeon and Henwood (2004) define triangulation as the use of multiple data collection methods so that the researcher can evaluate how consistent the findings might be.

Data Collection

In each school, students in the study completed one assignment in term 2 and another assignment in term 2. The assignments were research-based tasks in which students were expected to select an individual topic for research and use a range of information resources to find information, ideas, and concepts relating to their topic. [Appendix A](#) shows the class numbers and assignments.

In the study, four data-collection techniques were used:

- Nonparticipant observation (Powell and Connaway 2004). The researcher attended each school on three occasions to observe students both in the classroom and in the school library.
- Student diaries (Scott and Morrison 2006). In term 2, students in all three schools completed diary when completing their history assignment. [Appendix B](#) shows the structure of the diary for school A.
- Student questionnaires (Scott and Morrison 2006). After completing their term 3 assignment, students in all three schools completed a questionnaire. [Appendix C](#) shows the questionnaire for school A.
- Interviews with school staff and students (Johnson and Christensen 2007). One teacher and one teacher librarian were interviewed in each school at the beginning of term 3. One teacher was interviewed in each school at the beginning of term 4. Near the end of term 4, a group of three teachers and one teacher librarian was interviewed in each school. Also near the end of term 4, two groups of four students and four individual students were interviewed in each school. Interview schedules for staff and students can be found in appendixes [D](#), [E](#), and [F](#). Theoretical sampling interviews were conducted with one group of three teachers and the teacher librarian, and one group of students, in each school. The questions asked in the theoretical sampling interviews can be seen in appendixes [G](#) and [H](#).

Data Analysis

All data were coded, using line-by-line and focused coding. As each category of data (observation, questionnaire, diary, and interview) was gathered, data were analysed and interpreted, and each stage influenced the subsequent data collection. Thus analysis of diary data influenced the content of the student questionnaires, and re-analysis of the diary and questionnaire data influenced the questions asked in the student interviews. The researcher then developed categories to be tested via theoretical sampling interviews. The categories were analyzed through constant comparison, and the number of categories was reduced through re-analysis. While the process of coding, recoding, and testing of categories may appear to be laborious and complicated, it provides a much more in-depth analysis of data compared to other data-analysis methods and provides the researcher with a firm foundation for developing a grounded theory.

Findings and Discussion

Figures [1](#), [2](#), and [3](#) show the major categories and subcategories formed by the researcher, and these categories reflect the key findings of the study.

Valuing/Not Valuing Information Literacy Practices

The analysis of the data from staff interviews and student diaries, questionnaires, interviews showed that the great majority of students (c95 percent) valued information literacy practices. Students' interpretation of value can be seen in their statements on these practices. For example, in the questionnaires, students were asked what they would encourage the following year 7 students to put into practice regarding information literacy. Almost all the students recommended that the new students adopt information literacy practices (e.g., question formulation) and transfer these practices across subjects.

While the majority of students valued information literacy practices, only a minority (10–15 percent) were likely to transfer these practices. Students who valued the practices did so not only because it would help them—the utilitarian approach referred to by Limberg (2005)—but that it engaged them in thinking about the value of the practices as a whole. This can be seen as students engaging in higher-order thinking (Fitzgerald 1999; Moore 2002). These students were engaged in reflecting on their own learning, and they were able to make connections, for example, using their concept maps to structure their assignments. This minority of students can be viewed as active practitioners who took a metacognitive view of their learning. Research studies by Kuhlthau (2004), Barranoik (2004), Ryan and Hudson (2003), Wolf (2003), and Herring (2006) discussed aspects of metacognition, although the present study took a more focused view. In the wider schools-related literature, issues relating to metacognition in the school context were discussed by Zimmerman (1990); Keene and Zimmerman (1997); Eva-Wood (2008); and Michalsky, Mevarech, and Haibi (2009).

The majority of students valued information literacy practices and stated their belief in practices such as reading for information and evaluating information and ideas found in information sources. However, these students were reluctant to actively engage in these practices unless prompted. For example, in the interviews with these students, the researcher asked what some students meant when they had stated in their questionnaires that they did not *need* to formulate questions. The students stated that they had not been *told* to formulate questions, and therefore did not need to. This group of students took a received practice view of information literacy practices, that is, they were reluctant (but potential) practitioners. While these students were often engaged in their learning, they were not engaged in a metacognitive way as the active practitioners were. These students did make connections between information literacy practices, but in a much more limited way. For example, students could see connections between concept mapping and information retrieval, but they were much less likely to connect concept mapping and assignment structuring.

A very small minority (c3–5 percent) of students did not value information literacy practices because they did not understand the concepts involved in information literacy. For example, in the questionnaires, this group of students, when asked to comment on retrieving and interpreting information and ideas, often commented that they did not understand what they were being asked to comment on. These students also were very reluctant to be interviewed. It was clear that, while these students had been taught about aspects such as question formulation, information evaluation and note taking, they had not understood what they were being taught. While this finding was accepted by the teacher librarians and teachers in interviews, no strategy for dealing with these students was acknowledged.

This concept of students valuing (or not valuing) information literacy practices appears to be missing from much of the literature on information literacy in schools. Kuhlthau (2004) focused on information seeking, and while there is an emphasis on the affective aspects of students' actions, this is concentrated on the information-seeking process itself, not on whether students valued information literacy practices. Studies by Harada (2002), Barranoik (2001 and 2004), and Ryan and Hudson (2003) explored aspects of students' information literacy practices, but the extent to which students valued these practices in the same way as some students in the present study did is not considered in these studies.

Transferring/Not Transferring Information Literacy Practices

The key elements that emerged related to students' and staff's beliefs about transfer. Three groups of students were identified. These three groups paralleled the groups identified above in relation to valuing information literacy practices. A minority of students—the *actual transferrers*—believed in the value of transfer and put this into practice. In the interviews with these students, there was evidence of how students had transferred practices, such as effective information retrieval, across subjects and time. The majority of students—identified by the researcher as the *propositional transferrers*—believed in transfer in principle, (i.e., as a proposition) and urged future students to transfer practices. Despite this, they appeared to be reluctant to transfer these practices, unless they were encouraged to do so by teachers or teacher librarians. In interviews with this group of students, the students clearly saw the responsibility being with teachers. For example, some students pointed out that teachers actively encouraged the transfer of knowledge or techniques in subjects such as maths or science but did not actively encourage the transfer of information literacy practices. A very small minority of students were identified as *nontransferrers* (those who lacked an understanding of the value of transfer), and this was because of their lack of understanding of the potential value of information literacy practices. In the transfer literature, Haskell (2001) and Royer, Mestre, and Dufresne (2005) argued that transfer is unlikely to take place in most learning situations unless learners receive very specific instructions, and Haskell (2001) stressed the need for a culture of transfer. The present study supports both these views.

The teachers and teacher librarians appeared to take a similar view as the propositional transferor students: they saw transfer as having value in principle, but that they did not take steps to ensure that transfer might take place. The

expectations and assumptions of teachers and teacher librarians about transfer appear to be based not on practice, but on a view that transfer is an inevitable consequence of teaching. This study did not investigate the reasons teachers and teacher librarians had these views on transfer, but Hakel and Halpern (2005) implied that teaching styles in school may lead teachers to assumptions and expectations about transfer, and that teachers needed to re-examine approaches to teaching if transfer was to happen.

Culture of Transfer

In examining the concept of a culture of transfer in relation to information literacy practices, the present study was seen through a sociocultural lens (Volet 1999; Haskell 2001). This view implies that teachers, teacher librarians' and students' understanding of transfer is important, but it is not in itself enough to ensure that transfer will take place. The sociocultural view in this study takes into account the whole learning, teaching, and social contexts of the school and how each of these contexts has a bearing on the likelihood of students transferring or not transferring information literacy practices. This author argues that a culture of transfer, in relation to information literacy practices, will exist in schools with both formal and informal discussion of the issue of transfer. That is, a culture of transfer will exist where there is not only a school-wide policy on transfer, but where there is a belief among students, teachers, and teacher librarians that transfer is important.

It was clear that these three schools lacked a culture of transfer in relation to information literacy practices. Further, both staff and students viewed a culture of transfer as not only desirable, but necessary, if transfer were to become a more widespread practice among students. It also was clear that the establishment of a culture of transfer in relation to information literacy practices would require changes in both the attitudes and the practices of staff and students in these schools. This absence of a culture of transfer was acknowledged by both staff and students. This lack of status appears to be caused by the absence of any formal recognition of transfer and a lack of policy on transfer. Thus a restricting factor on the development of transfer in these schools is a lack of a whole-school policy on transfer. Eisner and Day (2004) identified a need for a policy on teaching specifically for transfer in arts subjects, but no such policies existed in the schools in the present study.

From the findings of the study and the categories developed by the researcher, which were tested using theoretical sampling, a grounded theory was constructed.

The Grounded Theory

The grounded theory was developed by the researcher's constructivist interpretation of the major and sub categories, which were formed from the data analysis and the theoretical sampling. The grounded theory developed from the whole study is presented below.

Theoretical Statement 1

Some students value information literacy practices in terms of personal benefits and in relation to their own learning, as well as seeing a utilitarian value in these practices. These students value information literacy practices as they reflect on, make connection between, and use these practices effectively. Such students are engaged not only with subject learning, but with the value they see in using information literacy practices. These students are keenly aware of their information environment, which is not limited to digital and print resources.

Theoretical Statement 2

Some students take a metacognitive view of their use of information literacy practices and are capable of making connections between a range of practices. These students are proactive and take a more personal and reflective approach. Other students take a more received practice and passive approach and, while they make short-term connections between practices, they are unlikely to be reflective without prompting from the teacher or teacher librarian. A small minority of students do not understand the concepts behind information literacy practices, do not make connections, and make little use of information literacy practices.

Theoretical Statement 3

A minority of highly motivated students have the facility to become engaged with their own learning, with assignment topics, and with information literacy practices. The majority of students lack this motivation but have the potential to become engaged with their own learning, with assignment topics and with information literacy practices. Where teachers and teacher librarians take a more student-centred approach to assignments, students are likely to become more engaged, and this engagement will be enhanced when these students are not only taught information literacy practices but also the rationale for using such practices. A very small minority of students lack an understanding of engagement with their own learning and with information literacy practices; these students are likely to need individual attention.

Theoretical Statement 4

Teachers and teacher librarians cannot assume that all students will value and understand information literacy practices. A minority of students may act as unengaged nonparticipants in that their failure to understand the potential benefits of information literacy practices will mean that they will not apply such practices, even when prompted or told to by the teacher or teacher librarian.

Theoretical Statement 5

Extensive transfer of information literacy practices among year 7 students in the three schools in the present study is unlikely to happen unless a culture of transfer can be established. A culture of transfer is only likely to be created by changes in the overall school culture, which includes staff and student attitudes to transfer as a concept and as a practice.

Theoretical Statement 6

Students' beliefs about transfer are important because these beliefs are one factor in determining whether students will transfer information literacy practices. If students value transfer and are encouraged to value transfer by teachers and teacher librarians, they are more likely to transfer. Most students will need to be prompted to transfer practices, and a very small minority of students will not transfer because they lack understanding of transfer as a concept.

Theoretical Statement 7

The manner in which teachers and teacher librarians view transfer will affect the development of transfer in a school. The lack of school policy on transfer and the subsequent lack of status of transfer in a school will have a detrimental effect on teacher, teacher librarian, and student attitudes to transfer. Developing a culture of transfer in a school may provide a solution to these problematical issues.

Conclusion

The key conclusion drawn from this study is a need for discussion between teachers, teacher librarians, and school management about the teaching of information literacy practices. This discussion should review the assumptions held by staff and students about information literacy and the extent to which students transfer information literacy practices across subjects and across school years. This study and anecdotal evidence from schools in Australia, the United States, Canada, the United Kingdom, and other countries suggests that these assumptions (e.g., that students will transfer information literacy practices) are often erroneous. The creation of a culture of transfer in relation to information literacy, and possibly other aspects of the curriculum, is viewed by this author as a prerequisite to the development of students who are active information literacy practitioners and transferrers. Research into the development of a culture of transfer in schools would be a valuable addition to knowledge in teacher librarianship.

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Year 7 Students, Information Literacy, and Transfer Appendixes

Appendix A. Selected Classes and Assignment Tasks

School	Student Participants	Term 3 Subject	Term 3 Task	Term 4 Subject	Term 4 Task
School A 280 students and 27 teaching staff. Mixed socioeconomic group	27	History	Students were asked to write a diary of a selected character from a medieval village and demonstrate aspects of the character's life.	Science	Students were asked to design a holiday brochure for travel to a planet.
School B 500 students and 47 teaching staff. Mixed socioeconomic group	25	History	Students were asked to identify a dictator who was, in the students' opinion, the cruelest of all dictators. Students were asked to justify their choice of this dictator.	Modern languages (Japanese)	Students were asked to outline an aspect of Japanese society and discuss the importance of that aspect in Japan.
School C 615 students	23	History	Students were asked	English	Students were asked

and 70 teaching staff Low socio economic group			to draw up a profile of an Egyptian god and to present this profile visually as well as in a narrative form.		to outline a topical issue, and discuss the topic, using multimedia
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Appendix B. Student Diary (condensed version)

XXX High School

Medieval Research Assignment—Student Diary

Please fill in your diary pages in the classroom or school library during lesson time. Please fill in your diary as directed by Mrs. A or Ms. B.

This diary belongs to:

Name: _____

Class: _____

When you are writing your diary, please make sure that you write at least THREE sentences for each entry. Your sentences should not be too short. Try to write about what you think you've learned or how you've gone about each part of the assignment. You will receive a mark for your diary as part of your overall assignment mark and the diary will be worth 10 marks out of 50. You should try to write neatly and in good English. Mrs. A and Ms. B will give you some practice in writing a diary.

Medieval Research Assignment—Student Diary Page 1

Brainstorming and Doing a Mind Map

Please write some notes on:

- What you liked about brainstorming with your group
- What you did not like about brainstorming with your group
- How you think brainstorming will help you with your medieval research assignment
- How you think having a mind map will help you with your medieval research assignment

Medieval Research Assignment—Student Diary Page 2

Writing Your Questions

Please write some notes on:

- How easy or difficult you found it to write out your assignment questions
 - How you think writing questions for your assignment might help you when you look for information for your assignment
 - How you feel about doing the rest of the assignment now
-

Medieval Research Assignment—Student Diary Page 3

Review of Possible Sources (books, websites, etc.)

Please write some notes on:

- How you went about finding the right information sources (books, CD-ROMs, websites) for your assignment
- How you decided whether the book or website would give you the right information for your assignment
- What you talked to other students about finding information for your assignment

Medieval Research Assignment—Student Diary Page 4

Revised Mind Map

Please write some notes on:

- What changes you made to your initial mind map and why you made these changes
- How confident you think you are that you can now do a good assignment

Medieval Research Assignment—Student Diary Page 5

Finding and Evaluating Sources and Note Taking

Please write some notes on:

- How you went about finding the *right* information for your assignment
- How you evaluated the sources (e.g. books or websites) and the information in them to make sure you had the right information for your assignment
- How you took notes (e.g., wrote notes in your notebook or cut and paste) and what your notes look like (e.g., a list of sentences with headings or a mind map with keywords or something different)

Medieval Research Assignment—Student Diary Page 6

Writing Your Assignment

Please write some notes on:

- How you organize your notes before you start to write your assignment
- How you decide what you are going to write in your assignment
- How you feel about your assignment now that you've written it

Medieval Research Assignment—Student Diary Page 7

Looking Back on Doing Your Assignment

Please write some notes on:

- How well you think you went about finding the right information for your medieval research assignment
 - How well you think you used your questions in doing your medieval research assignment
-

- How good you think your assignment is and how you could have improved it

Appendix C. Student Questionnaire

Questionnaire for students at XXX High School (condensed version)

Please fill in the questionnaire as best you can. In some cases, you will be asked to circle a letter (e.g., a, b, or c. or to write a sentence or two on what you did during your science assignment. You are asked to put your name on the questionnaire but the results of the questionnaire will be anonymous and your name will not be used in any publications relating to this research.

James Herring

Name: _____ Class: _____

1. In your medieval society assignment, you did brainstorming but not for your science assignment. Do you think that brainstorming for the science assignment would have: (Please circle all that you agree with)
 - Helped you to find out information
 - Helped you to get new ideas
 - Helped you to share information with others
 - Helped you to think about what you already knew about the solar system
 - Helped you with your assignment work later on
 2. Would you have liked to have done brainstorming for the science assignment? (Please circle) Yes No
If Yes, why would you have liked to do brainstorming?
If No, why would you not liked to have done brainstorming?
 3. Did you *write out* a mind map for your science assignment? (Please circle) Yes No
If No, please explain why you did not write out a mind map
 4. Do you think that you had a *mental* mind map (i.e. one in your head)? (Please circle) Yes No
If Yes, do you think the mental mind map: (Please circle all that you agree with)
 - Helped you to find information better
 - Made your assignment easier to do
 - Helped you make up questions to answer for your assignment
 - Helped you with your assignment work later on
 - Other (please explain)
 5. When you do assignments in the future, do you think that it would be a good idea to write your mind map on paper? (Please circle) Yes No
If Yes, why do you think it would be a good idea?
If No, why do you think that it would *not* be a good idea?
 6. Did you *write out* questions for your science assignment? (Please circle) Yes No
If No, please explain why you did not write out your questions
 7. Do you think that you had *mental* questions (i.e., in your head)? (Please circle) Yes No
If Yes, do you think your mental questions:
 - Helped you to find information better
 - Made your assignment easier to do
 - Helped you identify what you needed to do
 - Helped you with your assignment work later on
 - Other (please explain)
 8. How did you find the *right* information for your science assignment? (Please circle all that you agree with)
 - I used the catalog (computer) in the library
 - I found a book that covered my topic
 - I searched the web using the keywords from my topic
 - I talked to other students and found better information
 - Other (please explain)
-

9. How did you decide whether a book would give you the *right* information for your science assignment? (Please circle all that you agree with)
- I looked at the title of the book
 - I used the contents page or the index in the book
 - I browsed through the book
 - I used my keywords to look for the right information
 - I looked at my mind map or my questions
 - I ignored information that wasn't to do with my topic
 - Other (please explain)
10. How did you decide whether a website would give you the *right* information for your science assignment? (Please circle all that you agree with)
- I looked at the title of the website
 - I looked at the pictures on the website
 - I used my keywords to look for the right information
 - I browsed through the website
 - I looked at my mind map or my questions
 - I ignored information that wasn't to do with my topic
 - Other (please explain)
11. How did you take notes for your science assignment? (Please circle all that you agree with)
- I wrote words or phrases on paper or in my notebook
 - I wrote sentences on paper or in my notebook
 - I wrote my notes in Word
 - I cut and pasted from websites
 - I did a mind map
 - Other (please explain)
12. How did you decide what you were going to write in your science assignment? (Please circle all that you agree with)
- I looked at the notes which the teacher gave me
 - I used my questions
 - I used my mind map
 - I put my notes in order of importance
 - I selected the most important information from my notes
 - Other (please explain)
13. How well do you think you worked for your science assignment? (Please circle ONE)
- Very well
 - Pretty well
 - OK but I could have worked harder
 - Not very well—I should have done more
 - Other (please explain)
14. When you did your medieval assignment last term, you learned about doing a mind map, writing out questions, finding information in books and websites and recording where you had found information. Do you think that you used what you had learned last term for your science assignment this term? (Please circle) Yes No
If Yes, what aspects of what you learned did you use?
If No, why did you not use what you had learned?
15. If you were talking to next year's Year Seven at your school, what advice would you give them on doing a project like your medieval project or your science project, so that they could get a good mark? (Please circle all that you agree with)
- I would tell them to write out a mind map to get keywords for their topic
 - I would tell them to write out their questions
 - I would tell them to search the catalog in the library
 - I would tell them to use their keywords when using books
 - I would tell them to use their keywords when searching the web (e.g., using Google)
 - I would tell them to use their keywords when looking at a website
 - I would tell them to write out notes on paper
 - I would tell them to cut and paste information
 - I would tell them to look at their questions and mind map before writing their assignment
16. Please write down in your own words ONE more thing that you'd tell next year's Year 7 about doing assignments, so that they could get a good mark.
-

Thank you very much for completing this questionnaire.

Appendix D. Teacher interviews (terms 3 and 4)—List of Questions

1. What are the students being assessed on?
2. What skills can you assume that the students have before they do their assignment—planning searching writing etc?
3. To what extent would you expect these students to bring information literacy practices from primary school?
4. How does the range of reading abilities in your year 7 class affect students when they are finding and using resources such as books and websites?
5. How much feedback do you give your students?
6. When you assess students, what credit do you give for students' use of information literacy practices, e.g., mind mapping, finding information etc?
7. To what extent do you think students will transfer their information skills to other history assignments or to other subjects?
8. Is transfer a difficult concept for the students?

Appendix E. Teacher Librarian Interviews (term 3)—List of Questions

1. What range of information literacy practices do you think this class brought from primary school?
2. What information literacy practices had the students been taught before their history assignment?
3. To what extent was mind mapping and writing questions new to this group of students?
4. How good are students at writing questions?
5. How effectively would you expect the students to be able to search books for an assignment?
6. When students search on Google, what would you expect them to be able to do?
7. Have you discussed the teaching of information literacy practices with other teachers?
8. Do you expect the students to transfer their information literacy practices to other assignments?
9. Students further up the school—are they transferring?

Appendix F. Student Interviews (term 4)

1. Sharing information

Tell me about how you think students share information and ideas when they do brainstorming.

2. Reflecting on prior knowledge

Tell me about whether you think students in brainstorming get to think about what they already know about their topic.

3. Having an overview

Tell me about whether you think brainstorming and having a mind map will help students in doing the rest of their assignment.

4. Thinking about questions

Tell me about the questions you write down or think about when you're about to look for information for your assignment in books or websites.

5. Feeling confident

Tell me about how you feel when you have to do research for an assignment, e.g., are you always confident or are you unsure sometimes?

6. Finding the best information

Tell me about what you do when you are looking for information or ideas in books and websites, e.g., how you know whether what you're reading is what you need.

7. Talking to other students

Tell me about the kinds of things you talk to other students about when you're doing your research, e.g., in the library—things to do with your assignment.

8. Taking notes

Tell me about how you take notes and why you like taking notes in this way.

9. Accepting and rejecting

Tell me about how you decide what to include in your assignment before you hand it in, e.g., what you put in and what you leave out.

10. Conceptualising transfer

Tell me about whether you think you'll use what you learned about doing research for your assignments next year, when you're in year 8, e.g., will you use a mind map if the teacher doesn't ask you to?

11. Independent thinking or conformity

Tell me whether teachers need to remind you (or other students) of how to do your assignments well every time you do an assignment.

12. Thinking about their needs

Tell me about what you think year seven students need to be taught by teachers or the teacher librarian about using books and websites. E.g., what do year seven students need to know about this?

Appendix G. Theoretical Sampling Interviews: Students (term 2 of following year)

1. Do you think that students in your class make connections (e.g., using the mind map when starting to write the assignment) when they are doing a research assignment?
 2. Do students in your class think about the best way to find and use information for their assignments or do they just get on and do the assignment?
 3. What makes students in your class interested in using their information or research skills when doing an assignment?
 4. Where do students in your class get information from when they're doing an assignment?
 5. Do students in your class create their own information?
 6. Some students in your class don't appear to value what they're taught about things like exploring their topic, thinking about how to select the right information, or organising their assignment well. Why do you think this happens?
 7. Do you think that students in your class learn more about their subjects—like history or science—if they use things like a mind map or having questions?
 8. Do you think that students in your class have transferred some of the skills learned in year seven into year eight?
 9. How do you think teachers could get students to transfer skills from one year to another?
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Appendix H. Theoretical Sampling Interviews: Teacher Librarians and Teachers (term 2 of following year)

Preliminary question: How would you define information literacy in the school context?

1. To what extent do you think your year 7 students make connections when using information literacy practices/techniques, e.g., linking question formulation to writing the assignment?
2. To what extent do you think your year 7 students are capable of reflecting upon their use of information literacy practices and techniques?
3. What influences the extent to which your year 7 students are engaged with the information literacy/research/assignment process?
4. Tell me about what information literacy practices/techniques you think your year 7 students use.
5. To what extent do you think your year 7 students are able to think about their information environment and how to make effective use of it?
6. My research shows that some students do not value the information literacy concepts, skills and techniques because they (a) do not understand the concepts or (b) lack motivation or (c) view techniques, e.g., mind mapping as a waste of time. To what extent do you agree with these findings?
7. To what extent do you think that teaching year 7 students information literacy concepts, skills, and techniques will enhance students' subject knowledge or make them more independent learners?
8. What do you understand by the concept of transfer in the school context?
9. Do you think that there is a culture of transfer in this school in relation to information literacy development?
10. What would be the best way of ensuring that a culture of transfer did develop in the school?

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