A Grounded Analysis of Year 8 Students' Reflections on Information Literacy Skills and Techniques

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This research, undertaken in a high school in the United Kingdom, focuses on the views of year 8 students who were asked to reflect on their use of information literacy skills when completing an English assignment. Students completed a diary during the assignment, and a semi-structured interview was carried out with the class teacher. A grounded analysis approach was taken in analysing the student diaries and the teacher interview. Findings reveal a number of categories which illustrate the students' views of and use of information literacy skills: Using information literacy skills and techniques; Making links; Being confident; Being reflective.

Introduction

This study took place in a state comprehensive school in the United Kingdom and focused on a class of 21 year 8 (2nd year of high school) students who were completing a discursive essay on a topical issue as part of their English syllabus. Students were allowed to select their own topic but, in the assignment, the students were expected to provide a balanced argument in relation to their topic (e.g., using animals for medical research) as well as their own views. There was an expectation that students would use their information literacy skills to define, research and write about their chosen topic. The teacher conducted a class brainstorming session on the range of topics and how topics might be defined. These students had been introduced to mind mapping by the teacher librarian in year 7 but had no experience of question formulation, so the teacher encouraged students to engage in question formulation as a method of defining the parameters of their topic. The teacher allowed the students themselves to think about how they might use questions later. Most of the students in this class were relatively high achievers.

The teacher involved volunteered to be part of the study after a call from the teacher librarian. At the time of the study, the teacher had five years experience of teaching English. The teacher librarian worked with the English teacher to identify relevant sites from which students could select if they wished to do so, supported students doing research in the library and reinforced aspects of the students' classroom experiences, e.g., reminding students about using their mind maps and/or questions. The researcher's role involved discussing brainstorming, mind mapping and question formulation with the teacher prior to student completion of the

discursive essay; presenting the teacher with a draft student diary and agreeing to minor changes; and answering teacher questions during the essay completion period. The researcher had no direct contact with the students in this study.

Research Questions

The aims of the study were to analyse and interpret the diary reflections of year 8 students and to identify the information literacy attributes of this class of students. The following research questions were posed:

- How would students reflect on brainstorming, mind mapping and question formulation?
- Would students be able to link aspects of information literacy skills in completing their assignment?
- What factors would influence students' confidence during the assignment process?
- What information literacy attributes would this group of students demonstrate?

Literature Review

Information Literacy Defined

There is now a vast range of literature on information literacy in the school, higher education and workplace sector but there is no agreement as to one definition of information literacy or whether information literacy should be viewed as a concept, an ideal to be reached, a practice, a set of skills, set of competencies, a set of attributes or a combination of elements of these.

In 2001, Williams referred to information literacy as "an often-used but dangerously ambiguous concept" (p.4) and more recently, Wolf argued that, while most school based educators have a good knowledge and understanding of literacy, "when [literacy is] combined with information that understanding becomes clouded" (2007, Information Literacy, para 1). There is a raft of definitions of information literacy in the schools sector (see, for example, Abilock, 2004; Doyle, 1994; Herring, 2006, Langford, 1998; Moore, 2002) and these authors present a wide range of aspects of information literacy as well as attempting to define the information literate student. Herring and Tarter (2007) argue that an information literate student is one who is able to:

- identify the purpose of information and ideas being sought
- identify relevant and authoritative sources (electronic, print, human) of information and ideas
- read/view/listen to, understand and learn from such sources by evaluating the contents of such sources in relation to their purpose
- use the information and ideas found in the sources to produce curriculum related work (written or oral) in school and to extend their own learning of a concept or topic
- reflect on their ability to identify a purpose for and creative use of information and ideas both within the school and elsewhere
- transfer information skills across subjects and year levels in the school
- transfer relevant information skills from school to further/higher education and to the workplace
- learn and adapt to new information skills required in many workplace settings. (p. 4)

This author would argue that, if there is an emphasis on school students not only applying information literacy skills which they have been taught by teacher librarians and/or teachers, but also on *thinking* and *reflecting* on why, where and when they might use these skills, then information literacy may be defined as *a way of thinking*. This *way of thinking* would include not only thinking about information literacy skills but also about information literacy as a *practice* (Lloyd, 2006). If information literacy is viewed as a practice, then this practice would involve students: thinking about their own information environment–digital, textual and person-based; thinking about making choices in relation to aspects such as concept mapping (written or mental) or to relevant sources or interpretations of meaning in sources or what to include or exclude in their assignment; and thinking about what skills and/or ways of thinking they might transfer from one subject to another or from school to work or higher education. Often, information literacy is portrayed, for example, in standards in schools/higher education or in information literacy models, as a *process* which students follow but do not necessarily reflect upon in terms of practice.

Information Literacy Research

In the schools sector, research has identified a number of areas of interest to teachers and teacher librarians and these include: the affective aspects of information literacy (Kuhlthau, 2004); the use of guided inquiry (Todd, 2007); the use and evaluation of information literacy models (Herring, Tarter & Naylor, 2002; Wolf, 2007); social-emotional behaviour (Farmer, 2005); concept mapping (Cain, 2004; Gordon, 2000); students' use of journals or diaries (Harada, 2002) and transfer (Herring & Hurst, 2006). McKenzie (2007) has written widely on the value of question formulation but this has not been based on empirical research.

Critiques of Information Literacy

The concept of information literacy–as a set of skills, or a process, or a way of thinking, or as a practice–is not universally accepted. Boyce (2004) argues that most current views of information literacy–in teacher librarianship but also in education as a whole–reflect an outdated view of the information environment in which students operate. She argues that information literacy is bound up with learning and teaching in a print dominated world, whereas students live predominantly in a digital world. However, Boyce (2004) does not offer an alternative to current practices. Limberg (2005) criticises teacher librarians and teachers for taking a process view of information literacy and argues that information literacy teaching in schools should be aimed at "students developing a *repertoire* [Limberg's italics] of understandings of information seeking and use" (p. 47) and not merely at students learning a process.

Thus the debate on what constitutes information literacy, on how it should be taught and on what attributes an information literate student might have continues apace. It might also be argued that information literacy is akin to learning, in that many of us are constantly engaged in learning of different kinds and in different contexts, and that equally we may all be striving *towards* being information literate but that our changing information environment(s) may mean that we may never be totally information literate.

Research Methodology

This author takes an interpretivist and constructivist approach to research, and this implies that the author views this research as an example of the constructive interpretation of data from an educational environment in which students interact with each other and with teacher librarians and teachers. Two methods were used to collect data: the students each completed a structured diary, and a semi-structured interview was conducted with the class teacher.

The use of student diaries or journals as a method of data collection has been used in previous information literacy research by researchers such as Harada (2002) and Barranoik (2004). Student diaries are viewed as constructions by the students of their own reality and not as verbatim accounts of what they did or thought (Charmaz, 2006). The diaries were first given to students after the class brainstorming session. Students completed the diary sections in class and handed diaries back to the teacher. The diary sections (on separate pages) were: Brainstorming and doing a mind map; Writing your questions; Finding and evaluating sources and note taking; Writing your essay; and Looking back on your essay. Students were asked to write at least 3 sentences under each heading in each section. For example, on the *Brainstorming and doing a mind map* page, students were asked to:

> **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 with your discursive essay
> How you think having a mind map will help with your discursive essay

The student diaries were given to the researcher by the teacher when the essay had been completed.

Semi-structured interviews are viewed as sources of rich data by Burns (2000) and by others who argue that a semi-structured approach can allow the interviewee to express more open views than is possible within the constraints of the structured interview.

The data from the student diaries and teacher interview were analysed using constructivist grounded analysis. Grounded analysis emanates from work on grounded theory which was developed initially by Glaser and Strauss (1967) and then by Strauss and Corbin (1998); constructivist grounded theory was developed by Charmaz (2006) and others. Grounded analysis seeks to answer the question "What is happening?" from the data analysed. As this study was potentially an initial phase of a larger study, there was no attempt to develop a grounded theory from the evidence. Constructivist grounded analysis (Charmaz, 2006) views the researcher, not as an objective independent viewer of the observed world but, as in this study, as an interpreter of the views of the studied participants. Thus the analysis of the student diaries and the teacher interview allowed the researcher to interpret the data with an emphasis on what emerges from the data, as opposed to interpreting the data from the basis of a preconceived standpoint. The diaries and the interview were coded by the researcher using the comments tool in *Word for Windows*. Codes were constructed using active verbs (e.g., Writing down your ideas – an aid to memory; Hearing other people views, i.e., not just ideas; Others

giving you ideas if you're stuck), and categories were formed from reading and re-reading codes to identify common themes or issues.

Findings

The findings, based on the analysis of the 21 student diaries and the teacher interview, were organized into four categories:

- Using information literacy skills and techniques
- Making links
- Being confident
- Being reflective

These categories were then used to identify the information literacy attributes of this group of students. The categories were formed from a bringing together of a number of codes which were attached during analysis of the students' diaries and the teacher interview. There is an overlap between the categories which are not meant to be seen as completely separate. A qualitative approach to analysis was taken by the author, so there was no attempt to quantify numbers in relation to students' comments.

Using Information Literacy Skills and Techniques

For the purposes of this paper, the author has distinguished between information literacy skills–defining purpose, identifying keywords, effective searching for and identification of information sources, effective searching *within* information sources, evaluation and interpretation of information and ideas found in information sources, evaluating material for inclusion in or exclusion from the assignment, reflection on performance, and awareness of transfer–and information literacy techniques such as brainstorming, question formulation, concept mapping and note taking. It is recognised that skills and techniques may be seen as interchangeable by teacher librarians and teachers.

Students' comments showed that they placed great value on the techniques of brainstorming and concept mapping in particular, and it was obvious that students enjoyed using these techniques. Some students found question formulation more difficult, although, in the teacher's opinion, question formulation had been a basis of improvement in the quality of the students' writing.

The class brainstorming session provided students with an opportunity to discuss a range of topics and approaches to completing the assignment. For most students, the brainstorming session was of benefit, and students identified the following aspects of brainstorming which they found valuable:

- A source of ideas - comments included "It gives you an idea of what you are going to do. You can write down your ideas on the subject."
- Sharing of opinions and ideas - comments included "In a group, brainstorming allows everyone to have their opinions on the topic heard and you share your ideas. Your initial idea can be build upon by the rest of the group."
- Listening to others - comments included "It also gives the opportunity to listen and to appreciate what others have to say towards the topic in discussion."

- Encouraging thinking - comments included "Other people's ideas can give you inspiration, making it easier to think about a project that you really want to do."

The teacher's view of the brainstorming session was that the class engaged very well with the idea of exploring possible topics and approaches and that the session helped students to formulate questions, although they may not have been conscious of this. The student data showed that students did not refer directly to questions in their diary comments on brainstorming.

Students were also very positive about their use of concept mapping, and they had previous experience of drawing concept maps with this teacher. Students were asked to comment on how the mind map helped them in their assignment, and analysis of the data is provided in the *Making links* section below. Students were also asked to comment on question formulation as a technique in relation to how difficult they found it to do and how it might help them in completing their assignment. Analysis of the data on question formulation is also provided in the *Making links* section below.

In relation to note taking as a technique, students used a variety of approaches. Students made notes on paper ("I took notes in my jotter [exercise book] using bullet points and short sentences"), or used their concept maps ("I did a mind map of some of the information that I found. I had the name of my essay in the middle and I did the different paragraphs on the outside"), or used their questions ("I listed my questions and wrote the answers below the questions so it looked like a list of questions and answers"), or copied and pasted ("I printed out information from the Internet and used a highlighter to highlight keywords"). Students thus took an individual rather than a collective approach to note taking, and some students combined some of the approaches listed above.

In relation to information retrieval, two-thirds of students commented that they used the Web to find information on their topic, and many students cited *Google* as their first port of call. Students had been recommended sites by the teacher and teacher librarian, and a small minority of students referred to these sites. About half the students stated that they used the web but also looked for books on their topic; some students commented that there were no suitable books on their topic or that the books were out of date. Only one student cited books as her main source, commenting: "Surprisingly, I found that a particular book that I found held most, if not all, the answers I needed. It was quite handy for my project and held facts and figures that I found were useful to me. It gave me the exact information I needed." The use of "surprisingly" may indicate that this student, like most other students in this class, appeared to believe that most information would come from the Web. Comments on the value of Web searching included "I think the Internet is the most helpful as you can type in all your research questions and you get several websites to choose from."

Students were also asked how they evaluated the books or websites they found, and most students cited relevance to their topic as being the most important criteria although many students did not explain *why* the source might be relevant. Some students cited reliability ("I knew the BBC sites would help as my topic has been in the news recently and the BBC is a good source"), comparing websites ("I looked through a few different websites to make sure") and skimming and scanning ("I would generally skim through and if I thought I had seen

something useful, I would re-read it") as evaluation criteria. Two students referred to the sites recommended by the teacher and teacher librarian, and one student commented "I used websites that had been recommended by the school and so I stayed using those websites for the rest of the research period". Thus, while there was evidence of students using evaluation criteria in the sources they used, many of the students' diary comments were general rather than specific.

Students were asked to comment on how they decided what to include in their assignment, and the analysis showed that there was no common criteria used by students. Some students referred to using questions, and comments included "Used the questions and answers to decide what I would write in my project," while other students cited a more personal approach, arguing that they included what they found most interesting or what they wanted to express in the essay, with one student commenting "A mind map and decided which I felt strongly about." Some students cited selecting the most important or most relevant aspects of their topic while other students expressed a more casual approach, with comments such as "I just went with the flow" and "I use whatever comes to mind and then redraft it." No strong pattern emerged from students' comments about inclusion in their assignment.

The students' use of information literacy skills and techniques revealed some common approaches in some areas but also very individual approaches in other areas. In the interview, when asked about what information literacy skills the students brought to the assignment, the teacher expressed doubts about the students' ability in the area of information literacy skills and stated "When it comes to research, I think it's less likely that they will have an idea as to how to actually go about that, in terms of researching something seriously and deciding what information is going to be most useful" but added that encouragement to use questions and mind maps would have helped many of the students.

Making Links

The M*aking links* category focuses on students' ability to identify links or connections between different aspects of their use of information literacy skills and techniques during the completion of their assignment. The key areas where students showed an ability to make connections were brainstorming, concept mapping and question formulation.

As well as providing a source of ideas, as discussed above, brainstorming was seen by students as a base on which they could build. Students were asked how they thought brainstorming would help them with their project and many students emphasized that brainstorming provided them with a way of organising their thoughts and determining the exact focus of their assignment. One student summed this up, stating "Brainstorming is a very effective way of jotting down all your thoughts and choosing which topics you would like to write about. It is also a good way of organising your thoughts and deciding what order you choose to write the project." Making links with the writing of the assignment was done by a number of students and specifically by one student who wrote "[From brainstorming] I get good descriptive words to help me explain different parts of my argument. Also I get good words and phrases to start my paragraphs." Students also commented that they could return to the notes they made during brainstorming later.

In relation to concept mapping, students cited a range of connections or links which they made with subsequent parts of their assignment completion. These included viewing the concept map as an *aide memoire,* and about half of the students made reference to looking back at the map. Comments included "A mind map helps by the fact that if I get an idea, I put it on that and I can just go back to that page. It really helped me because I never forgot what I was doing." Students also linked the concept map with notetaking ("The information can be written down in sections of the map. The information is easy to find as it is in sections"), with the order in which to write the essay ("A mind map helps me because I can write down ideas I have and I can put them in order of when I want them in my essay") and with what to include in the essay ("Your map helps you to know what you want to put into your essay and what you don't").

It was interesting that only two students referred to information retrieval in relation to their concept map but the reason for this was clear when the data from statements about question formulation was analysed. The great majority of students made a connection between question formulation and information retrieval, and students identified different ways in which questions could aid the retrieval of relevant information for their assignment. Students cited having a focus for information retrieval ("I think that writing questions helped with looking for information because you knew what you were looking for–not just looking randomly for information"), using keywords ("I knew exactly what I was hoping to find out and could take keywords from the questions to use when using a search engine") and confidence in searching ("Once I had written the questions I felt a lot more confident for searching for information").

Students also made connections between question formulation and the essay structure, and comments included "I think writing questions is good because you know what information you are looking for and when you find the information, you can build your essay around that." Some students noted that having questions made completing the assignment easier, and one student commented "When I had answered my questions, I found it much easier to write my essay." As was noted above, the teacher's opinion was that question formulation was the key to what was seen as an improvement in the students' work overall and the teacher commented,

> I think the questions enabled them to actually have a different kind of experience when it came to research initially and also writing their essays. I think with the search, it gave them a far greater sense of direction and clarified aims – their own personal aims. When it came to writing the essay, it made it more likely that they were going to be more able to convey a distinct line of argument and that the essay itself would read as a whole. They would have a complete kind of considered view.

The teacher also noted that students were initially sceptical about question formulation but that they subsequently realised the value of the questions and told the teacher how useful questions had been, thus demonstrating what links they had made.

Being Confident
The *Being confident* category examines students' reflections on how they felt at certain stages of the assignment process and the extent to which their use of information sources and the ideas and information within these sources made them more or less confident. The most direct source of data in relation to confidence came from students being asked how they felt about doing

their assignment once they had written their questions. Almost half of the students included the words "confident" or "confidence" in their answers, and all emphasized that having questions had made them more confident in a range of ways. Students related confidence to: structuring their essay, e.g., "I felt much more confident about writing my project when I had done my questions because it gave me a strong structure to have for my project"; providing a focus, e.g., "I felt confident to do my project as I knew what I was writing about and I had my questions to answer"; planning for their essay, e.g., "I felt confident that I could write a good essay. I felt that I had enough planning to write it"; and having less irrelevant information, e.g., "I felt more confident about my essay because I didn't have tons of information about this, that and the other and things I didn't need."

The students who did not use the word "confident" expressed elements of confidence, stating that question formulation had made them feel more positive about their assignment or had made them feel that the essay was easier to write, or that they felt more relaxed about the assignment as a whole. One student summed up the comments of her peers, stating "I felt more relaxed and then when I got on to the project, it had made it a lot easier. Having questions took some of the pressure off and I felt better."

When asked about student confidence, the teacher commented that this was, in general, a fairly confident group of students but the teacher also stated that some students had found question formulating initially daunting and that this appeared to have affected their confidence. The teacher confirmed the students' comments on confidence and stated that, once students had formulated their questions, their confidence rose appreciably.

Being Reflective

The B*eing reflective* category examines the extent to which students can reflect on their own use of information literacy skills and techniques as well as their own evaluation of their performance in writing the essay. Facets of *Being reflective* include reflecting on information seeking and reflecting on their own performance. Students were asked how well they had gone about finding the right information for their assignment. Most students answered fairly generally, stating that they had done fairly well, and some students noted that they could have found more information if they had used a wider range of sources. A small minority of students thought that they had done very well and had found all the information they needed, and two of these students noted that they had used the websites recommended by the teacher and the teacher librarian.

When asked about how well they had used their questions, most students stated that they had used them very well in relation to finding information for their essay, the content of their essay and the structure of their essay. Only two students commented on the use of questions to support the thrust of their essay, and one student commented "I could have used my questions more argumentatively but I'd say they were good questions. It's a good idea to have questions." Another two students stated that they had formulated questions and used them to find information but had not used them when writing the essay.

Students were asked how good they thought their assignment was and how they might have improved it. Almost all students stated that they thought that they had done a good project, and a number of students stated that they were proud of what they had done. In

relation to improvements, areas included finding more information ("I could have improved it by adding some more facts and opinions"), improving specific parts of the essay ("I think I could have improved on the introduction and the end of my essay"), becoming more involved with the argument ("I feel it could have been much better if I had felt more passionate about it") and using a wider range of sources ("if I had used different sources rather than just books and the Internet, e.g., interviewing someone who works with animals"). The teacher confirmed the students' comments about improvements but added that almost every student had improved their performance in researching the topic, in structuring the essay, in producing a balanced argument and in using the information and ideas they had found. The teacher insisted that the key difference in the students' performance was mainly due to their question formulation which had been a catalyst for improvements in other areas such as information retrieval, essay structure and argument.

Discussion

This research focused on one class of students in one school and one teacher; it is limited in scope, and therefore no generalizations can be made, for example, about year 8 classes in other schools. Grounded analysis is not concerned with generalizations but seeks to identify potential categories which *may* be of interest to other researchers and practitioners. This study confirms some of the findings in the literature of information literacy but it also identifies gaps in that literature and challenges some of the assumptions that may be present in the literature on information literacy in schools. This section seeks to explore these issues.

Although the students in this study did not use an information literacy model, the students' use of information literacy skills and techniques reflects some of the findings of Kuhlthau (2004) in relation to brainstorming; of Cain (2004) and Gordon (2000) on concept mapping; of Harada (2002) on the effectiveness of student journals; and of Herring, Tarter and Naylor (2002) and Wolf (2007) on such aspects as definition of purpose, information retrieval, the effective use of information in assignments, and reflection on the use of information literacy skills. Kuhlthau's conclusions on student confidence are also affirmed in this study with student confidence rising as a result of question formulation. In this respect, this study is a confirmation of previous research and is similar to some of the approaches taken in previous studies.

Where this study differs from previous research on information literacy in schools and where it might extend the debate about information literacy in schools can be seen in the approach to the analysis of the data and the identification of the information literacy attributes of the students in the study. In particular, the focus on *making links* demonstrates that these students–who had not been introduced to any model of information literacy–were not merely following a series of steps but were consciously reflecting on the value of information literacy skills and techniques, e.g., in relation to linking a concept map with information retrieval. Thus, these students did not merely value the *immediate* value of a concept map, for example, to identify keywords, but also the *future* value of the concept map. The students made clear links between question formulation and information retrieval–what might be seen as the next step–but they also made links between question formulation and essay content and structure. Students' opinions were captured in their diaries during the time in which they completed their assignment and not post-completion. The students could therefore be seen to be engaging in not

only evaluating skills and techniques as they were used but also engaging in *predicting* the future value of techniques such as question formulation. Comments from the students also demonstrated that students were engaged in *iterative reflection* in that most students stated that they went back to their questions and/or concept maps before writing their essay.

The emphasis by both students and their teacher in this study on the value of questions provides empirical evidence of how students thought about questions and saw challenges in question formulation and also how they valued questions. McKenzie (2007) has emphasised the values of questions, but there has been little evidence in other research studies of students and/or teachers being so emphatic about the value of questions.

The information literacy attributes of most of these students–and not all students demonstrated all these attributes at all times–can be summed up as:

- Being responsive to the teacher's promptings on the value of questions
- Being reflective on the use of information literacy skills and techniques
- Being reflective on the present and future value of information literacy skills and techniques
- Being selective in their choice of information literacy techniques
- Being iterative in their use of information literacy techniques
- Making links between different information literacy skills and techniques.

This study suggests that it may be fruitful for teacher librarians and teachers in schools to focus less on information literacy *skills* and more on information literacy *techniques* and more on the desired attributes of students rather than the skills they demonstrate.

One aspect of information literacy that this study did not focus on, except in the interview with the teacher, was the extent to which students might transfer their information literacy skills and techniques across time and across curricular subjects. The teacher's view was that students were unlikely to do this, and she commented,

> But I'm not so certain that they would transfer these skills without me reminding them of what they did. So, I don't imagine that all that many of them would necessarily, if you asked them to go and research another topic, draw up a list of questions. I don't think they would.

There is little emphasis on transfer of skills in the information literacy literature, with the exception of a one-school study by Herring and Hurst (2006) and Kuhlthau's examination (2004) of some aspects of transfer from school to university and work.

Conclusion

This is a limited study, in terms of being restricted to one class in one school, but it has highlighted the need for further research, not only in relation to students use of information skills but also in relation to the attributes which schools may wish to see developed in their students. There is also a need for an extensive study of the issue of transfer in schools: there is anecdotal evidence that teachers and teacher librarians value transfer and often assume that it takes place, but there is little empirical research about whether students do transfer information literacy skills and attributes across time, e.g., from one school year to another, or across curricular subjects.

In relation to current practice in schools, this study implies that teacher librarians themselves might take a more reflective stance on how they teach information literacy skills and techniques to students, by placing less emphasis on process and more emphasis on developing responsive and reflective students who understand the value of making links.

References

Abilock, D. (2004). Information literacy from prehistory to K–20: A new definition. *Knowledge Quest, 32*(4). Retrieved November 11 2008, from http://www.ala.org/ala/mgrps/divs/aasl/aaslpubsandjournals/kqweb/kqarchives/ vol32/32n4abilock.pdf

Barranoik, L. (2004). Students and their research: Architects of meaning. *Scan*, *23*(2), 33-37.

Boyce, S. (2004). Information literacy and school librarianship: A critical look at pedagogy and profession. In S. La Marca & M. Manning (Eds.), *Reality bytes: Information literacy for independent learning* (pp. 19-32). Melbourne, Australia: School Library Association of Victoria

Burns, R. (2000). *Introduction to research methods* (4th ed.). Frenchs Forest, Australia: Pearson Education.

Cain, M. (2004). Using mind maps to raise standards in literacy, improve confidence and encourage positive attitudes towards learning. Paper presented at the National Teacher Research Conference, London.

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. London: Sage.

Doyle, C. (1994). *Information literacy in an information society: A concept for the information age*. Syracuse, NY: ERIC Clearing House on Information & Technology.

Farmer, L. (2005). Social-emotional behavior and information literacy. In S. Lee, P. Warning, D. Singh, E. Howe, L. Farmer & S. Hughes (Eds.), *IASL Reports 2005: Information leadership in a culture of change.* Erie, PA: International Association of School Librarianship.

Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine.

Gordon, C. (2000). The effects of concept mapping on the searching behavior of tenth-grade students. *School Library Media Research*, *2*. Retrieved November 11, 2008, from http://www.ala.org/ala/aasl/aaslpubsandjournals/slmrb/slmrcontents/volume32000/mapping.htm

Harada, V. (2002). Personalising the information search process: A case study of journal writing with elementary-age students. *School Library Media Research, 5*. Retrieved November 11, 2008, from http://www.ala.org/ala/aasl/aaslpubsandjournals/slmrb/slmrcontents/volume52002/slmrvolume5 2002.htm

Herring, J. (2006). A critical investigation of students' and teachers' views of the use of information literacy skills in school assignments. *School Library Media Research*, *9*. Retrieved November 11, 2008, from http://www.ala.org/ala/aasl/aaslpubsandjournals/slmrb/slmrcontents/volume9/informationliterac y.cfm

Herring, J., & Hurst, J. (2006). An investigation into the extent to which Year 6 students transfer information literacy across subjects. In J. McGregor & L. Hay (Eds.), *Research in Teacher Librarianship: Proceedings of the Centre for Studies in Teacher Librarianship Research Conference, Australian National University, Canberra, 9-10 April 2005.* Retrieved *Nov*ember 11, 2008, from http://www.csu.edu.au/faculty/educat/sis/CIS/epubs/CSTLpapers.htm

Herring, J., & Tarter, A.-M. (2007). Progress in developing information literacy in a secondary school using the PLUS model. *School Libraries in View*, *23*, 3-7.

Herring, J., Tarter, A-M., & Naylor, S. (2002). An evaluation of the PLUS model to develop pupils'
        information skills in a secondary school. *School Libraries Worldwide*, *8*(1), 1-24.
Kuhlthau, C. (2004). *Seeking meaning: A process approach to library and information services* (2ⁿᵈ ed.). Westport
        CT: Libraries Unlimited.
Langford, L. (1998). Information literacy: A clarification. *School Libraries Worldwide*, *4*(1), 59-72.

Limberg, L. (2005). Informing information literacy education through empirical research. In J. Henri & M.
        Asselin (Eds.), T*he information literate school community 2: issues of leadership* (pp. 39-50). Wagga
        Wagga, Australia: Centre for Information Studies, Charles Sturt University.
Lloyd, A. (2006). Towards an understanding of information literacy in context: Implications for research.
        Journal of Librarianship and Information Science, *40*(1), 3-12.
McKenzie, J. (2007). *Leading questions*. Bellingham, WA: FNO Press.
Moore, P. (2002). *An analysis of information literacy education worldwide*. White Paper prepared for
        UNESCO, the U.S. National Commission on Libraries and Information Science, and the National
        Forum on Information Literacy, for use at the Information Literacy Meeting of Experts, Prague,
        The Czech Republic. Retrieved November 11, 2008, from
        http://www.nclis.gov/libinter/infolitconf&meet/papers/moore-fullpaper.pdf
Strauss, A., & Corbin, J. (1998). *Basics of qualitative research* (2ⁿᵈ ed). London: Sage.
Todd, R. (2007). Guided inquiry supporting information literacy. *Scan*, *26*(2), 28-29.
Williams, D. (2001). Information literacy and learning on-line. IN SCROLLA Networked Learning
        Symposium, University of Glasgow, November 14, 2001. Retrieved November 18, 2008, from
        http://www.scrolla.ac.uk/resources/s1/williams_paper.pdf
Wolf, S. (2007). Information literacy and self-regulation: A convergence of disciplines.
        School Library Media Research, 10. Retrieved November 11, 2008, from
        http://www.ala.org/ala/aasl/aaslpubsandjournals/slmrb/slmrcontents/volume10/wolf_informatio
        nliteracy.cfm

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