

## *Instructional Intervention is the Key: Supporting Adolescent Information Seeking*

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*This research sought to examine the information seeking processes employed by Canadian junior high school students from Inuvik, Northwest Territories and Beaumont, Alberta when using CD-ROM encyclopedias and when completing inquiry-based learning activities. The first study revealed that participants needed both instruction and practice to develop the skills and strategies needed for full-text searching of CD-ROM encyclopedias. The participants tended to use search terms only from the original question, had difficulty selecting topics and articles from the retrieved list, and did not read long articles as carefully as short articles. The second study revealed that students needed support throughout the inquiry-based learning experience and that using Kuhlthau's Information Search Process model as a guide for affective stages was useful. Participants needed time to explore, discuss, and read before finding a focus for their inquiry. Both studies found that participants wanted time to talk and discuss and that instruction was important to help students move forward in their searching and learning.*

### Introduction

Understanding the information seeking processes of adolescents involves looking at various kinds of situations where there is an information need. Adolescents often need to find specific bits of information for school homework, reports, and personal interests. At other times, they are involved in more sustained research where they use a variety of information sources to develop an understanding of a topic or issue. This article brings together two studies that look at adolescent information seeking processes. It is interesting to examine two studies together to see what patterns emerge and then to use this information to inform our practice. The first study revealed that instruction is key to moving students forward in their information seeking. It also introduced a new research method for gathering information seeking process data from adolescents working individually. The second study confirmed the need for instructional intervention to assist students with their inquiry-based learning and introduced a research method to gather information seeking process data when students are working in groups.

The first study examined the information seeking processes employed by junior high school students from Inuvik, Northwest Territories, Canada, when using CD-ROM encyclopedias. The second study followed a group of grade 8 students in Beaumont, Alberta as they completed a large research project using a variety of resources including online databases, online library

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catalogues, electronic encyclopedias, the Internet, and the print collections of the school, public, and academic libraries.

### Literature Review

Research on the information seeking behavior of children and adolescents is limited. According to Chelton and Thomas (1999),

One of the challenges of teaching graduate students to work with children and youth in school and public libraries is to inform their approaches to instructional design and their understandings of how people use information technology through an examination of current research. The problems in so doing have been exacerbated by the scare, fragmented, and sometimes flawed nature of past research in information and library studies dealing with youth issues in information seeking, (p. 7)

Research using adolescent participants can help to inform not only those who work in school libraries and young adult departments of public libraries, but also those who serve adults. For Chelton and Thomas, "considering the problems of youth in navigating increasingly sophisticated searching environments may be helpful to system designers, at the same time that they serve as cautionary guideposts to those who may have forgotten the problems that exist for novice users of all ages" (pp. 7-8). Of course, junior high students are an interesting population all on their own. Their need for information for projects and personal enjoyment becomes important at this stage of their school life.

Researchers have tried to determine what it is that novice users do when accessing information in electronic environments (Fidel, 1984; Solomon, 1993; Tenopir, Nahl-Jacobovits, & Howard, 1991; Trivison, Chamis, Saracevic, & Kantor, 1986). Oliver and Oliver (1996) suggested that new skills are needed to find information in these new environments and that the skills necessary are quite different from those needed when using traditional sources. The researchers also reported that these specific skills did not develop from personal exploration of the system. They suggested that the three main problem areas in the use of multimedia and hypermedia applications in schools and school libraries are disorientation, navigation inefficiency, and cognitive overload.

Without intervention by a teacher or school librarian, Fidel (1991a, 1991b, 1991c) found that novice users lacked the ability to form effective search plans and to select correct search keys. Trumball, Gay, and Mazur (1992) stated that novice users "have only impoverished strategies for synthesizing data into patterns" (p. 315). Pappas and Geitgey (1994) observed that novice users' information seeking strategies might be at any point on the simple-to-complex continuum. Most students left on their own failed to progress to a more analytical search strategy.

Marchionini (1989) contended that users of information technology are required to deal with finding too much information and so need different

skills to deal with refining and selecting appropriate articles. Gross (1999), in her study of imposed queries in three school libraries, found that "in using resources, students had trouble finding answers when they had to search through a lot of text [and] when the resources did not use the same terminology they were given in class" (p. 513). Hirsh (1999) explored the relevance criteria and information seeking of 10 grade 5 children using the OPAC, the Internet, World Book Encyclopedia, and SIRS magazine index. Participants reported that they relied on teachers, librarians, and peers for help in finding information. Librarians were asked for help with search terms, search strategies, and locating materials. Fidel et al. (1999) studied the searching behavior of grades 11 and 12 high school students on the Internet. Like Hirsh, Fidel et al. found that searching was a social and academic experience for students.

Bilal (2000, 2001, 2002) reported the results of a research project that looked at 22 grade 7 students' use of the Yahoo!igans! Web Search for fact-based and self-generated search tasks. Bilal (2000) found that those children who used single or multiple concepts alone were more successful than those who used single or multiple concepts as well as natural language phrases. Scrolling, use of the back button, and navigating links were three important physical behaviors that all students used. Students browsed more on the self-generated tasks and were much more satisfied with the results than when the topics were assigned (Bilal, 2002).

Bilal (2002) also found that the students' self-generated topics were "research-oriented and broad in nature" (p. 1181). Fully one third of the students were unable to formulate a focus for their search and those who "searched under their initial broad topics remained undecided about the information to select from the results they retrieved" (Bilal, 2002, p. 1181). In fact, Bilal found that most students needed mediation to find their true information need. Students continue to need instruction and practice to be able to find a focus and select an inquiry topic.

The research literature on adolescents and information seeking behavior indicates that teaching and support are critical when searching in electronic environments. Research in the early years of information technology (Fidel, 1991a, 1991b, 1991c; Marchionini, 1989; Trumball et al., 1992) and in recent years (Bilal, 2000, 2001, 2002; Branch, 2000; Gross, 1999) reports similar findings. This indicates that adolescents are not becoming more effective information seekers even though there is much more access to electronic information in school and at home. If teachers, school librarians, and public and academic librarians are to help adolescents become information literate adults, more research will be needed to document the successes and challenges of adolescent information seekers when searching in electronic environments. This also means exploring instructional strategies that help adolescents become more effective searchers. These strategies must support both the cognitive and affective domains.

There is a body of literature that can provide support for the use of children and adolescents as participants in the study of information seeking. Children and adolescents are an interesting population to study, and the research described has contributed greatly to our overall understanding of how children engage in information seeking and learning.

### Research Methods

In the last few decades, researchers (Hirsh, 1999; Hughes, Packard & Pearson, 1998; Kuhlthau, 1983; McGregor, 1993; Xie & Cool, 1998; Yang, 1997) exploring the information seeking behavior of children and adolescents have relied heavily on qualitative methods. For the qualitative researcher, the choice of research methods depends on the questions being asked and the context in which the research is placed (Denzin & Lincoln, 1998). The use of multiple methods to obtain the most complete, rich, and in-depth data is fundamental to qualitative research. Researchers have been anxious to gather the thought processes and decision-making steps of children and adolescent information seekers, and verbal protocol analysis is a wonderful way of gathering this type of data. In these two studies, the multiple methods used to gather data included three types of verbal protocol analysis used in conjunction with videotaping, audio taping, and observation.

Three types of verbal protocol analysis were used to gather data about the information seeking processes of adolescents in this article. *Think Alouds* are verbal reports gathered while a participant is completing a task, for example, a search for information on the Internet. *Think Afters* are verbal reports gathered after participants have completed a task, for example, watching videotape of their CD-ROM encyclopedia search and then being asked to recall their actions and thoughts while they were completing the task. *Think Togethers* are verbal reports gathered while a group of participants are doing Think Alouds together, for example, discussing their information seeking processes as they complete a group or individual project. To learn more about the Think Alouds and Think Afters as methods, please refer to Branch (2000).

### *Study 1*

In this study, junior high students from Inuvik, Northwest Territories were selected by the teachers to represent varying reading and academic abilities, language and travel experiences, ethnic and Aboriginal backgrounds, and a fairly equal gender split. The six male and six female participants ranged in age from 11 to 15. Six participants were male and six were female. Eight of the participants were Aboriginal: one was Cree, two were Gwich'in and five were Inuvialuit. Six were born in the Northwest Territories, four were born in other parts of Canada, and two were born in other countries (South Africa and the United States).

Participants were asked to think aloud while searching and this talk was recorded. After the search, participants watched a videotape of their search

and were encouraged to add any comments about their information seeking processes at that time. These Think Alouds and Think Afters were recorded using audiotapes. Videotaping the computer screen was felt to be effective based on previous work with Mackey (2002) and because it provided a simple way to replay the search for participants so that we could discuss their information seeking processes.

Each participant was given a general introduction to the CD-ROM encyclopedias. The participants explored the search features and the navigation features of each encyclopedia. Any symbols that might be confusing were explained. Microsoft Encarta Encyclopedia Deluxe 2000 was chosen because it is a popular encyclopedia, and earlier versions of this encyclopedia were located in the school and public library and in some of the classrooms. 1999 World Book (Deluxe) was selected because it has more Canadian content and because the school and public library have multiple sets of the World Book print encyclopedia. None of the participants had prior experience with the CD-ROM version of World Book Encyclopedia. Participants mentioned using other CD-ROM encyclopedias including Grolier and Compton's. Older participants seemed to be more familiar with CD-ROM encyclopedias and computers.

### *Study 2*

In this study, a small group of students in a grade 9 class were followed for two months as they completed a research project on a topic of their own choice. As part of the class, participants and the rest of the class received instruction from the school librarian. This instruction included lessons on topics such as research process, planning a project, critical thinking, searching varied resources—for example, Electric Library, University of Alberta library, and the Internet—and webbing. The four participants in this study were selected by the school librarian. During the 18 classes, students shared their information seeking strategies and their reflections on the research process. All class participants were asked to do Think Together by sharing their ideas, processes, resources, and plans. At five points during the research project, participants were asked questions in Think Afters about their research process and their feelings about the research project. Participants responded using a personal tape-recorder.

## Findings

### *Study 1*

In the first study, 12 students completed three search sessions and answered four questions in each search session. The search sessions were designed to move from questions and topics about which students had little background knowledge, to questions that related to current school work, and then to questions that were generated by the student.

### *First Search Session*

The first search session involved two simple searches and two more complex searches on topics that were deemed to be unfamiliar to students. All 12 participants answered the same four search questions:

1. Who was the first woman in space?
2. Describe the cardinal/a bird.
3. Who was the first man in space?
4. Describe the boxer, a dog.

The participants had an overall average time of just over 5.5 minutes to answer the questions in Search Session 1. The participants used a variety of search terms, and some spent a long time just staring at the screen. Navigation in the CD-ROM encyclopedias was a frustrating problem during the first searches. The participants struggled with article outlines and the list of retrieved topics. They had trouble clicking back and several times became lost or ended up back at the initial search page. Some of the participants used long strings of terms together to try to locate the answer.

### *Second Search Session*

In the second search session, students answered questions that were created with the assistance of their classroom teachers to represent topics that were currently under study in their social studies classroom. The questions focused on Alaska, Egypt, and Canadian and world geography. Participants discovered that simple search terms were the most effective way of finding the answers to the questions during Search Session 2. It also became apparent that background knowledge helps when searching for questions about countries, rivers, and geography. The participants moved through the encyclopedias purposefully and spent little time sitting and thinking about search terms. For the most part, they just jumped right in and were willing to make adjustments to search terms as needed.

### *Third Search Session*

Participants were given a form at the end of Search Session 2 so that they could write down their questions for Search Session 3. Search Session 3 provided some interesting approaches to information seeking on CD-ROM encyclopedias. All the participants generated questions that were important to their personal lives and interests. Most of the questions were those that could be found in an encyclopedia. The mean amount of time needed to answer their self-generated questions was just over six minutes. Most students continued to use the same search strategies that they had developed over the first two search sessions. One student used natural language sentences when searching for most of his answers; this was a departure from how he had previously searched. Two students continued to use general search terms that resulted in a large number of retrieved topics.

*Study 2*

The four junior high inquirers in this study needed time to formulate a focus for their inquiry project and the mediation of both the school librarian and the researcher. This time included instruction in how to plan for an inquiry and how to retrieve a variety of print, nonprint, and electronic resources to support their inquiry. The instruction focused on strategies to develop an essential question; to map ideas and questions that arise from the essential question; to create an outline; to develop a rubric for evaluation; to think about higher-level questions and critical thinking techniques; to search on-line databases, library catalogues, and the Internet; and to evaluate Internet sites. In other words, students needed time, instruction, and mediation to get to the essential question and develop a plan for their inquiry. Finding an essential question is the hardest part of any inquiry and one that requires students to commit to a topic and then be engaged enough to sustain a long inquiry. Once they determined their focus, students needed little assistance with note-making, creating the PowerPoint presentation and sharing aspects of the project. It seemed that once the essential question was determined, the inquiry moved forward quite well.

In this study, instruction was shown to influence the inquiry process. In the early weeks of the inquiry, instruction allowed students to gain skills and strategies that would help them to be better able to plan for inquiry and retrieve a variety of materials to support their needs and interests. The instruction was designed to support students as they planned for their inquiry and allowed them time to explore questions and issues. The retrieval strategies that were taught also gave students time to explore their topics in the databases, catalogues, and on the Internet. This allowed students time to develop the background knowledge necessary to develop an essential question.

During the inquiry project, students exhibited a range of affective behaviors. They were excited to begin an inquiry project of their own choice. However, this meant that some topics needed refining. An interest in World War II, for example, developed into an essential question of the conditions that must exist for World War III to happen. An interest in the television show *Friends* developed over time into a question of whether the actors and actresses that play the characters on *Friends* are worth one million dollars an episode. An interest in witches developed into a question of the role that recent pop culture has played in changing our perceptions of a witch.

Once committed to a topic, students were able to sustain their inquiry over the next five to six weeks. Even in the final Think After (completed a week after the inquiry was complete), students still felt committed to their topic. All participants felt positive about their inquiry topic. There was some frustration and confusion as students tried to move from an interest to an essential question. There was also some frustration when trying to find information on the Internet to answer their question. Two of the students

preferred to use books to complete the assignment as a result of finding inappropriate information on the Internet.

There was some anxiety with creating bibliographic entries from information gathered on the Internet. A few students failed to copy down all the information they needed from Internet sites. This was a teachable moment, and the school librarian was able to show students how to use Noodle Tools ([www.noodletools.com](http://www.noodletools.com)) to record their bibliographic information. Even though students knew that bibliographies were part of the evaluation of the inquiry, this was an unpleasant part of the inquiry.

During the processing and creating phase, students were, for the most part, excited and busy. One student commented that this was his favorite part of the assignment, "actually designing the slides and putting the info on the slides." This was a time when the school librarian and teacher could move about the room answering quick questions and monitoring progress. Students enjoyed using PowerPoint to present information and new knowledge. This software package allows for a lot of creativity and students were keen to add music and images to their presentations. For many students this was the best part of the inquiry. There was some anxiety when the time came to present their inquiry projects to others in the class. This is not surprising given that the presenters were teenage boys and girls. However, most students were excited about sharing their inquiries.

The study showed that instruction enables students to cope with too much information. Many students found the amount of information on the Internet to be challenging. As a result, the school librarian and I guided them to online databases including SIRS Researcher and Electric Library/Big Chalk. Many students found information that was useful for their inquiry here. However, some students with topics such as influence of the characters on Friends, gender issues in professional snowboarding, and strength training for golfing found many useful Internet sites. Instruction on how to narrow and broaden searches and how to find the best resources on the Internet helped to alleviate some of the confusion and anxiety.

Some students chose to find information in other ways. Several students selected print resources from the University of Alberta library or the public library to support the materials in their school library. These students also acknowledged when they felt more comfortable using print materials and found a quiet corner in the library and did their work away from the computer lab. The school librarian and the researcher encouraged students to choose the best possible resources to answer their inquiry questions.

The study raised the important dimension of supporting small-group and whole-group discussions about the inquiry process. Using the Think Together Method allowed the four participants to spend time talking about the inquiry process during various stages of the inquiry. Most of the discussion focused on feelings that were being experienced during the current stage of inquiry, that is, excitement, frustration, relief, anxiety, information overload,

and so forth. During each Think Together the researcher encouraged students to look at Kuhlthau's Information Search Process model (Kuhlthau, 1993) to locate their current feelings, as well as progress on their inquiry in relation to the six stages. This was a useful activity as students could discuss being "through" one stage and onto the next. Allowing participants the time to talk about the process and to relate their feelings to a model was an effective way of encouraging an open and safe dialogue. Large-group discussion was also encouraged during the instructional times. The school librarian had a strong sense of the need to reflect on the process throughout an inquiry and created a safe atmosphere in which to question and wonder.

The study found that students sought help from classmates who had special skills in creating "flashy" PowerPoint presentations. Many students had experience with using PowerPoint to create basic presentations, but wanted to be able to incorporate sound and images into them. Those students with expertise in locating copyright-free images and sounds were highly sought after during the creating stage of the inquiry. There was also much of discussion on design of the PowerPoint presentation and how to "capture the interest of the audience." Using PowerPoint allowed the students to deliver succinct, organized information in a creative way. This meant that students could make point-form notes from print and electronic sources and use them as the basis for their presentation. Because PowerPoint presentations eliminate the need for lengthy written ideas and focus on "hitting the highlights," students spent more time organizing information into coherent chunks and adding visuals to engage their audience of 14-15- year old students. In other words, "flashy" presentations were important, and so locating appropriate visuals and sounds became another part of the inquiry process.

## *Discussion*

### *Study 1*

In Study 1, participants all began their search by typing something into the search box. The search term either retrieved a list of topics or gave the message "no topics found." The latter caused some participants to be frustrated or confused. Some of them asked for help in generating a new search term. When the participants retrieved a list of topics, most skimmed through the list looking for a topic that seemed relevant. When they did not find such an article, some of the participants used a top-to-bottom strategy. Once in an article, participants either skimmed or read the article depending on its length. Several of the participants used highlighted terms as a guide to locate the answers. Once in the appropriate article, the participants usually found the answer. The participants tended to perform three main processes. They entered search terms, skimmed through the list of retrieved topics to find a relevant article, and read, skimmed, or scanned through article out-lines and articles to find the answer. The information seeking processes were

the same over the three search sessions. Navigation skills and confidence improved over time.

Factors that influenced the information seeking processes of junior high students were gathered using information from key informants, participants, and the observations of the researcher. These included such things as finding the right key word or phrase; knowing when to narrow or broaden the search term; and having time, patience, and persistence when searching. Other factors included previous computer experience, asking questions of others, reading ability, skimming and scanning skills, and having an understanding of information contained in an electronic encyclopedia.

The findings from this study indicate that there is a need for teachers and school librarians to work with junior high students to help them learn to access information efficiently and effectively. The Think Alouds and Think Afters provide support for the findings of Kuhlthau (1993) and her Information Search Process model. Across all searches, and in individual searches, participants followed the affective stages of the model. These feelings included uncertainty, confusion, frustration and doubt, clarity, sense of relief, and satisfaction. Findings from this study also supported the work of Tenopir et al. (1991) and Bilal (2000), who noted that participants tended to use the same strategies during searching and that those participants who tended to use simple search terms continued to do so throughout the searches.

The findings of this study also supported the work of Oliver and Oliver (1996) who noted that participants tended to prefer one strategy over others and that those with more computer experience used more options. Most of the participants did not make use of advanced search features. Participants in this study had trouble finding answers when they had to search through a lot of text as noted in the work of Bilal (2000) and Gross (1999). Hirsch (1999) and Fidel et al. (1999) found that participants were frustrated when results were not as expected, and this study confirmed that finding.

### *Study 2*

In Study 2, participants were open to sharing information and ideas in the Think Together situations and found the discussions helpful to their planning and organization of their inquiry. Students felt comfortable with their fellow participants and used ideas and conversations as a springboard for their own ideas and concerns. Only two of four participants were successful in completing the whole research task: research and complete Power Point presentation. Three students successfully located appropriate information on the topic of their choice and were able to formulate a focus. This is similar to Bilal (2002) who found that 73% were successful when searching for information on a topic of their own choice. The participant who never really found a focus for his research spent most of his time looking at general information about several topics. Bilal (2002) also found that several students in her study

did not "possess a clear focus about their information need, despite the fact that the researcher and the school librarian assisted them in clarifying specific topics" (p. 1176).

Students were at various stages of the Kuhlthau model every time we met for Think Together. Focus Formulation for many students happened during eighth class, and this was an exciting time to be working with the class. While working toward an inquiry question, students needed emotional support as well as instruction or mediation. Two of the students found that books proved to be the best information source. There was some frustration when the Internet did not provide the best possible information or when there was too much information. This confirms the work of Oliver and Oliver (1996).

### Recommendations for Practitioners

Both studies found that students needed teaching to make them better searchers. Teachers and school librarians need to examine how they prepare, facilitate, and evaluate or reflect on information seeking and inquiry experiences. The following recommendations are made in the hope that they assist teachers and school librarians.

Practitioners should become familiar with the work of Tenopir et al. (1999), Kuhlthau (1993), and Bates (1989) and other research about the information seeking processes of children and adolescents. Familiarize students with these models and provide opportunities for practice. To prepare for information seeking and inquiry experiences in classrooms and libraries, practitioners must be prepared to deal with the need of searchers to ask questions, and to address the affective behaviors that may occur during planning, retrieving, processing, creating, planning, and sharing. At this time, it is important to acknowledge that searching for information can be frustrating, confusing, upsetting, exciting, and challenging. Encourage students to ask others for help when they encounter new vocabulary. Help students to develop strategies and skills to deal with the affective stages of the Information Search Process, that is, uncertainty, optimism, confusion, frustration and doubt, clarity, sense of direction, confidence, and relief or satisfaction or disappointment.

Give students the opportunity to complete inquiry projects of a personal nature and provide materials with a variety of reading levels so that all students can successfully retrieve and process information. Students often have difficulty when retrieving information for inquiry projects, so demonstrate and give them time to practice using skimming and scanning techniques, including the use of highlighted search terms as a guide for their scanning or checking, article outlines, indexes, headings, and subheadings. Explain to students the differences between databases, indexing and abstracting services, electronic encyclopedias, and the Internet and provide opportunities for students to use each of these.

When acting as a facilitator for information seeking and inquiry experiences, support small-group and whole-group discussions about search terms and search strategies as this may provide new techniques and ideas that are unique to one searcher but may be useful for all. Encourage students to engage in self-talk, talk with peers, or talk with teachers and school librarians during their searches. Allow students with low literacy levels extra time to locate information, and expect students to need varied amounts of time to find information. Support students when they feel overwhelmed, confused, frustrated, and full of doubt, and provide opportunities for students to use information technologies so that their confidence can improve. Focus on the three domains of human behavior from the work of Tenopir et al. (1991); the first is the affective domain that controls goal selection; the second is the cognitive domain that determines the strategies necessary to reach goals; and the third is the sensori-motor domain that implements the physical actions necessary to reach goals.

When evaluating and reflecting on information seeking, it is important to use observation and research to inform practice. Support, and encourage others to support, research projects in local school districts, schools, and school libraries. Making elementary, middle, junior, and senior high school settings available can enable researchers to carry out studies of importance to teachers and school librarians. Write and report on the interesting observations, strategies, and ideas that are happening in schools and school libraries. Researchers need to continue work in the area of information literacy research and inquiry learning in schools and school libraries. Studies are needed that compare the information seeking processes of junior high students as they access information from other reference tools, both print and electronic; explore what happens as students complete real assignments, projects, and reports as selected by the teacher, school librarian or the students themselves; and use a natural group setting in the library or a classroom away from a laboratory setting. It is also important for researchers to observe students as they interact with others, as they would normally do. There must also be an effort to continue to test information seeking models and theories in real-life settings with school-aged participants who come with a variety of backgrounds, experiences, and abilities.

### Conclusions

These studies explored the information seeking processes of adolescents in two information need situations. Researchers are encouraged to extend these studies by using similar methods in various contexts, with varying information sources, and with small and large groups of participants over an extended period. It is hoped that these studies suggest general and specific ideas to readers for use in similar situations. The research methods presented in this article can be used and/or adapted for use in school libraries and classrooms as ways of finding out more about how children and adolescents

search for information and complete an inquiry-based unit. By providing opportunities for students to Think Aloud while searching (or completing other library or classroom tasks), teachers, teacher-librarians, and other students gain an in-depth understanding of the students' information-seeking process. This helps practitioners to correct specific misconceptions or errors, provide individual support, and plan instructional sessions to address common problems. It can also provide an opportunity for students to act as peer tutors. Students also learn about their own learning styles while doing Think Alouds. Using Think Together supports the idea of a community of inquirers and provides opportunities for students to talk about their thinking. This process is the foundation of a school that believes in social constructivism. Think Together are easily done as part of cooperative learning or as a group sharing experience on a regular basis. Group members can take turns being responsible for recording and/or sharing ideas with the rest of the class after each session.

Many students start with electronic sources, especially the Internet, when looking for information for all types of information needs. In these studies, students were discouraged when their topic was not covered well or if their search terms did not help them locate the appropriate information. Teachers and school librarians need to help students be better searchers in electronic environments and also help them cope with the challenges of finding too much information.

Working with students to help them develop organizational and time management skills is an important part of an inquiry project. Given organization and time, students can create thoughtful, critical, and important inquiry projects with quality information as the basis. Allowing students to create PowerPoint presentations creates more interest in the inquiry project. For that matter, students like to have choice for presentation styles.

Using Think Together as a way of talking about both the affective and cognitive experiences of completing an inquiry project can be useful. Open dialogue using Kuhlthau's stages allowed students to recognize their feelings, and cognitive struggles and successes were a natural part of completing an inquiry process. Using the model consistently to guide discussion allowed students to chart their own progress and to realize when they had moved on to a new stage.

Five key suggestions for practitioners would be the following.

1. Spend time exploring research process models such as Kuhlthau's (1993) Information Search Process and have students think about their own research process throughout the research inquiry.
2. Focus equally on the affective domain along with the cognitive domain to support students throughout a research inquiry (use Kuhlthau's affective domain as a guide).

3. Provide time for students to gain background knowledge about the topic before expecting them to focus and provide graphic organizers such as webs to support focus formulation.
4. Provide opportunities to reflect on the process throughout the research inquiry using journals and small- and large-group discussion.
5. Provide students with support and skills for dealing with large amounts of text: reading non-fiction strategies such as using keywords, titles and subtitles, skimming, and scanning.

Any inquiry project requires both emotional and cognitive support from peers and teachers or school librarians. Instruction in the planning and retrieving stages of the inquiry can support students in the most challenging and most important part of the inquiry. A testament to the time and effort spent in the early stages of the inquiry was the level of commitment students displayed throughout the inquiry and their overwhelming agreement that they would not choose another topic if doing the inquiry again.

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