

Implementing a Process Approach to Information Skills: A Study Identifying Indicators of Success in Library Media Programs

SLMQ Volume 22, Number 1, Fall 1993

Carol C. Kuhlthau, Professor, Rutgers University, School of Communication, Information and Library Studies. At the time of this article, she was an Associate Professor.

This article describes a study that identifies some primary inhibitors and some basic enablers for successful implementation of library media programs. The programs studied are based on a process approach to learning from a variety of sources integrated into one or more subject areas.

The mission of the school library media center as clearly Defined in Information Power is “. . . to ensure that students and staff are effective users of ideas and information.”(1) Library media specialists across the country have been working diligently to implement programs to accomplish this mission. Some programs thrive and grow, while others—designed with equally good intentions—are confined to narrowly defined roles.

Skills for Using Information

The process approach to information skills involves active use of information and ideas for learning across the curriculum. It is founded on extensive research into students' experiences in gathering information for research assignments. These studies have revealed a deep complexity underlying learning from a variety of resources.(2) Findings indicate that although students need to develop skills in locating sources and finding information, they also need to develop skill in using information once it has been located. Skills for using information are at the very core of education for the technological environment and are central to the mission of the school library media center in the information-age school. Information skills that incorporate location and interpretation skills prepare students for the full range of information seeking and use in an information society.

Constructivist View of Learning

Undergirding the process approach to information skills is a constructivist rather than a transmission view of learning. The traditional transmission view portrays learning as taking place through the acquisition of factual knowledge delivered by the teacher, often called “the sage on the stage” method, or by predigested material from a textbook. The constructivist view, on the other hand, builds on what students already know and actively involves them in learning through the use of a variety of resources.

Constructivist theory provides a sound basis for library media programs in the information-age school.(3) Students are engaged in extensive problem-driven research incorporating their thoughts, actions, and feelings in a holistic learning process. Beginning with their intuitive theories and prior constructs, they investigate emerging questions and share their new understandings in a collaborative environment. A constructivist perspective requires access to a wide range of materials for learning and advocates developing information skills for learning from a variety of sources. The information skills developed within the constructive process of learning may be applied readily in a wide range of educational contexts and for learning and problem solving in real-life situations.

Phases in the Constructive Process of Learning

Constructivists are deeply concerned with the process of learning as well as the content of learning. The philosophy of education developed by John Dewey is consistent with the constructivist view of learning.(4) He emphasized the importance of reflection in the active process of learning. Dewey portrayed learning as a constructive process occurring in five phases of reflective thinking:

- suggestion (doubt due to an incomplete situation)
- intellectualization (conceptualizing the problem)
- guiding idea (forming a tentative interpretation or hypothesis)
- reasoning (interpretation based on facts)
- testing by action (idea tested by overt or imaginative action)

The fourth step, reasoning, reveals the need for substantial sources of information in this process. Learning comes about through active, thoughtful use of information.

George Kelly's work in Personal Construct Theory defined the constructivist view of learning from a psychological perspectives.(5) His phases of construction portray the interplay of thinking and feeling in five stages that are similar to Dewey's phases of reflection. The five phases of construction are:

- confusion and doubt (new experience)
- mounting confusion and possible threat (inconsistent/incompatible information)
- tentative hypothesis (a direction to pursue)
- testing and assessing (assessing outcome of undertaking)
- reconstructing (assimilating new construct)

Kelly described the process of learning as "a full cycle of sensemaking."

Another important proponent of constructivist theory in learning is psychologist Jerome Bruner. He also emphasized that the individual's deep thinking, what he called interpretation, is central to the learning process.(6) Bruner noted that it is not enough merely to gather information. If the individual is to understand it and learn from it, there is an essential, interpretive task. Interpretation is based on personal constructs built from past experience that enable students to

go beyond the information they locate to create something uniquely their own. Bruner describes the interpretive task as occurring in five phases, similar to those of Dewey's reflection:

- perception (encountering new information)
- selection (recognizing patterns)
- inference (joining clusters and categories)
- prediction (going beyond the information given)
- action (creating products of mind)

The concept of going beyond the information given to form a personal understanding is central to constructive theory.

The constructive phases of learning described by Dewey, Kelly, and Bruner are similar to the stages revealed in the studies of the information search process.(7) The tasks, thoughts, actions, as well as the feelings commonly experienced in the information search process, have been described in the following sequence of phases:

- initiation (contemplating the task and possible topics; uncertainty)
- selection (selecting a topic; optimism)
- exploration (encountering inconsistency and incompatibility; confusion)
- formulation (forming a focused perspective; clarity)
- collection (gathering and documenting; confidence)
- presentation (connecting and extending; satisfaction or disappointment)

The information search process describes the holistic, personal process of learning from information. It is consistent with the constructivist view that people learn by acting, thinking, and feeling in a personal, creative way. Studies into the information search process indicate the necessity of guiding and coaching students in the complex, constructive process of learning from a variety of sources of information.(8)

Library Media Programs Based on the Process Approach

Like constructivist theory, the process approach is a perspective on learning rather than a formula for teaching. Although the process approach to information use does provide a perspective for designing library media programs, there is no formal plan or packaged program that can be applied in all situations or schools or for all students. Specific activities are developed and adapted by library media specialists and teachers in actual situations with real students.

There are some general guidelines, however, for guiding students in the development of skills for seeking and using information in each stage of the information search process.(9) First and foremost, the process approach is initiated by open-ended problems, questions, or topics that need to be addressed by using a number of sources over a period of time. These open-ended issues arise directly from the curriculum to initiate problem-directed research, rather than artificially imposed research assignments that only peripherally relate to the context, content, and objectives of the course of study.

During initiation, an invitation to research is extended to students to prepare them for the creative process ahead. Some basic groundwork is laid to prepare students for the research process. An introduction such as a particularly gripping work of fiction, a vivid video portrayal, or an engaging speaker can capture the attention of students and enable them to form some basic constructs upon which to build. During this initial stage the students become aware of issues and questions worthy of further investigation and identify those issues that are of personal interest to them.

Brainstorming in the early stages draws out what students know and provides opportunities for generating, clarifying, and sharing ideas. Raising questions about their existing knowledge provides motivation for proceeding to find out more. An audience for their work beyond the teacher is established at the start. Brainstorming encourages collaborative learning at the very beginning of the process.

In the early stages, students concentrate on topics, ideas, and questions that need further investigation rather than getting enmeshed in the mechanics of the project. Mechanics are stated directly but in no way overshadow the central task of gaining a deeper understanding of a particular problem, issue, or topic. Keeping a journal is a useful strategy throughout the process and can serve a variety of purposes at different points. For example, at one point students use their journals to record thoughts on possible topics, plans for addressing the project, and prospective problems. Later in the process, they use their journals for detailed notetaking.

At the beginning, students are introduced to the concept of stages in the search process and become aware of what to expect in the ensuing project. The model of the information search process is used to illustrate the sequence of tasks, thoughts, actions, and feelings that are commonly experienced in each stage of the process. Students may refer to the model from time to time to determine where they are in the process.

After students have selected a topic or area for research, they are carefully guided and coached through the exploration stage. This is frequently the most difficult stage. Uncertainty prevails as students encounter information that is inconsistent and incompatible and does not match what they already know. Reading and reflecting in a receptive mood and in an unhurried environment are conducive to formulating new understandings. Opportunities for discussing newly formulated constructs are offered through one-on-one conferences, small group interaction, and large group discussions. Journals are helpful for recording interesting ideas, connecting themes, and emerging questions developed from a number of sources instead of extensive copious notes from one source. This activity also deters students from the tendency to copy word-for-word or to plagiarize when presenting.

Students gain a clear understanding that their task during this time is to form a focused perspective of their topic or problem by reading, investigating, and thinking. A focused perspective provides direction for collecting information and is the turning point of the information search process. Once a focus is formed the search takes on a central theme or guiding idea that provides the basis for making judgments of what information to collect and what to disregard. Notetaking strategies shift at this point to recording detailed notes on information related to the focused perspective of the topic.

The final stage is organizing ideas for presentation. Students are guided in determining what will be paraphrased, summarized, and quoted and how to document the origin of the information used. Connections are made between and among the ideas and extensions of meaning are identified and explained. Presentations take many forms and are addressed to the collaborative learning group, not solely to the teacher.

An essential part of the process approach to information skills is assessing the process as well as the product at the end of the project. An opportunity to look back and take account of the entire process enables students to recognize that their experience has not been isolated to this one incident but is applicable to a wide range of situations. Journals provide an excellent means for students to review their process. By reflecting on their use of time, use of sources, and evidence of a focus in their presentation, they develop an awareness of their own information search process. "Process folios" of student work representing the various stages of the project provide an excellent way to assess the process of learning.(10)

Implementation of a Process Approach

This phase of the research into the information search process of secondary students centers on the implementation of a process approach to information skills in library media programs. The main question under investigation was: when the constructive process of learning from a variety of sources of information is implemented in a library media program what are the major problems media specialists and teachers encounter and what are the identifiable elements of success? Problems were identified as "inhibitors" and elements of success as "enablers."

Information Search Process Institutes

The first step in implementation was to present the process approach to library media specialists. A training institute was developed that would provide an opportunity for library media specialists to experience the process firsthand, reflect on the process they had experienced, and discover ways to guide students through the process.(11) The institute took place in or near a library where participants could research a topic of their choice. During the library research, they were called upon to reflect on the process in which they were involved through small-group discussion, journal writing, and debriefing sessions. Intensive firsthand experience with the information search process formed a basis for developing process-oriented library media programs for students. With this new perspective, the library media specialists worked together, as reflective practitioners, to design activities for students to develop skill in using information for gaining a deep understanding of a topic or problem. Donald Schon describes the reflective practitioner as an expert who relies on experience and theory to develop practice, while the novice depends on specific rules and procedures.(12)

Information search process institutes were held in locations across the United States, Canada, and Sweden. Although the length of the institutes ranged from one day to one week, each consisted of three essential components: firsthand experience in researching a topic; reflection on the process being experienced; and discussion with colleagues on ways to guide students in the process. Surveys of participants at the close of the institutes revealed considerable change in

perception of the mission of library media programs, understanding of the information search process, and commitment to adopt a process approach to information skills instruction.

Implementation Study

Participants in the institutes were invited to join in the implementation phase of the research. Those who volunteered completed questionnaires identifying the subject, the instructional team, and the students targeted for integration of the information search process. In addition, participants identified and described process aspects in their present program and gave an overview of plans for implementing an extensive process approach.

Six months later, participants were sent questionnaires requesting their assessment of implementation progress. Library media specialists and teachers with whom they had teamed were asked to respond to the following questions: What worked well? What problems did you have? What advice do you have for people starting a process approach? What are your future plans for the process approach in your library media program?

Results: Primary Inhibitors

After two years of collecting responses, the researcher found that certain patterns began to emerge. Some programs seemed to be stalled, while others achieved one success after another. Participants in the stalled programs cited three primary inhibitors: lack of time, confusion of roles, and poorly designed assignments.

Lack of time became evident in two different ways. One was lack of student time on the task. Rarely was there enough time for students to work through the process under the guidance of the teacher and library media specialist. A common pattern was to have the class come into the library media center for one or two class periods at the beginning of the project, usually early in the exploration stage, and then leave the students to their own devices throughout the rest of the information search process. In such cases, the library media specialist continued to guide those students who came into the library media center on their own, but did not see the final project and had no sense of how the students had fared in the process.

A second aspect of lack of time was insufficient planning time for development of team instruction. Teachers and library media specialists had no time set aside for working on activities and little time to develop the joint aspects of their teaming efforts. Essentially they assumed traditional roles because they lacked time to be more inventive and explore ways that they might work together to help students develop skills for seeking and using information within a subject area.

The lack of time for planning may have contributed to another problem, a basic confusion over roles. No clear notion of who was responsible for what was developed beyond the traditional roles of the library media specialist as resource gatherer and the teacher as assignment giver. There simply was not sufficient time to identify new roles. There was also no recognized or articulated role for administrators to play. In fact, most administrators were not involved in any way.

The third problem that became evident in the stalled programs was assignments that did not encourage a process approach. In fact, some assignments actually seemed to impede learning. Assignments were primarily designed by the teacher with the library media specialist joining in sometime after initiation and frequently much later in the process. Many assignments were “added on,” rather than being an essential component of the course of study and directly integrated into the subject-area curriculum. To make matters worse, the assignments were sometimes given at the most inconvenient time in the school year, such as the week before winter break or after the marking period in the spring. Even the most enlightened teachers seemed to regard library assignments as enrichment activities rather than as ways of learning essential concepts and for developing basic skills for addressing emerging questions.

In summary, lack of time, role confusion, and poor assignments were the main problems participants identified as preventing successful implementation of process-oriented library media programs.

Further Investigation of Elements of Success

It was more difficult to identify the underlying characteristics of programs that were judged to be successful. A number of positive responses described projects that students were involved in and plans for teaming in the future. In addition, there was noticeable evidence of excitement and enthusiasm among respondents. Particularly interesting were the responses to the question, “What problems did you have?” Responses indicated a fundamental difference between successful programs and struggling programs. Respondents from successful programs stressed learning problems of their students while responses from struggling programs dwelt on logistical problems of getting the program established. For example, respondents from successful programs described the need to develop new ways to help students form a focused perspective as they gathered information. Conversely, a respondent from a struggling program typically described the lack of time to work with students and teachers.

In order to investigate and identify basic elements underlying successful implementation, a longitudinal case study of one program was conducted over a period of four years, from 1990 to 1993. The site of the case study was Manhasset Junior High School in Manhasset, New York, located on Long Island, a short distance from New York City. The school has a long-standing reputation for quality education and has been the site for a variety of educational research projects.

The school was chosen as an example of successful implementation from survey responses, which indicated that the process approach was developing into an established program. In addition, the library media specialist contacted the researcher, enthusiastically described the accomplishments of the program, and suggested that a site visit be made.

Three site visits and five phone interviews took place between May 1990 and February 1993. Focus interviews were selected as the primary method for investigating the participants’ perceptions of what had taken place. The researcher did not observe the actual program in practice but reviewed the observations, recollections, and assessment of each member of the

instructional team. The focus interviews gave each member of the team an opportunity to respond to the questions and to hear the responses of other team members.

Qualitative methods were used to collect data to provide insight into what was happening in this program. Multiple methods produced overlapping data from questionnaires, interviews, materials developed by the instructional team, and student projects.

The first focus interview was conducted with the instructional team in the spring of 1990. Participants included the principal, assistant principal, language-arts coordinator, two language-arts teachers, the reading/study skills specialist, and the library media specialist (two social studies teachers who were part of the instructional team were not present at the interview). In the spring of 1991, a questionnaire was administered to each team member. In addition, the library media specialist was interviewed by telephone. A focus interview was conducted with the library media specialist and teachers in the spring of 1992 and again in 1993. Each interview was conducted by this researcher and audiotaped. In the focus interviews each participant was asked to respond to the following prompts: Describe your program and how it is different from what you have done before. What worked well? What problems have you encountered? What role did you play in the program? Tell an anecdote of process learning that you observed. What are your plans for the future of this program?

Ten Elements of Success

The series of focus interviews, along with the assessment questionnaires, provided substantial data for a case study. Analysis of the assessments and articulations of the instructional team revealed the following critical elements in this successful program:

1. The program was built on a well-established library media service already in place. The library media center had an attractive, well-functioning facility; an extensive reference collection; access to outside sources through technology; a qualified staff of full-time library media specialists supported by a full-time clerk; and a program of active use across the curriculum.
2. There was a strong team approach to instruction, with administrators playing an integral role.
3. Members of the instructional team exhibited respect for the knowledge and competence of other team members and all seemed to enjoy working with one another.
4. Each member of the team clearly recognized that the process approach was different from the previous approach. They agreed that the process was a creative endeavor rather than a mechanistic exercise.
5. All members of the team took the project seriously and carefully considered the way the unit of content and associated skills would be learned by the students. The team spent considerable time planning, assessing, and designing activities. Students were guided in all stages of the process from the beginning through assessment after presentation.
6. Major emphasis was placed on activities in early stages of the process to guide students in initiation, exploration, and formulation.

7. The team stressed students' "emotional attachment" to their project. Students were interested, involved, and engaged.
8. Mini-lessons were developed and taught as the need arose, rather than using extensive, artificial lessons that offered too much at the wrong time.
9. There was a collaborative learning environment with "everyone on task." Students of different ability levels worked side by side and learned from one another.

Results: Basic Enablers

The ten critical elements in this successful program indicated four basic enablers. The basic enablers are stated as underlying principles for successfully implementing a process approach to information skills.

1. A team approach to teaching with administrators, teachers, and library media specialists playing essential roles in the instructional team.
2. A mutually held constructivist view of learning compatible with the process approach that provided the foundation for actively engaging students in problem driven inquiry.
3. A shared commitment to teaching skills for lifelong learning and for motivating students to take responsibility for their own learning.
4. Competence in designing activities and strategies to improve student learning.

Discussion of Basic Enablers

1. A team approach to teaching with administrators, teachers, and library media specialists playing essential roles in the instructional team.

First and foremost, a process approach to information skills was revealed as a team effort. The faculty of the school was found to have extensive experience in a team approach to instruction. The administrators were an integral part of the instructional team. Each member of the team had a clearly defined role to play in the process approach. Genuine mutual respect and appreciation for each other as contributing members of the instructional team was evident.

The subject-area coordinator articulated the goals and set the philosophical framework for the process approach. He explained to the instructional team how the approach fit into curriculum and was tied to the school goals and objectives. One school goal was to develop higher-level thinking and the coordinator explained that the "information search process is our way to achieve this goal." The coordinator articulated the constructivist view of learning and was able to describe how the process approach was compatible with this view. The writing process approach had been in place for a number of years, and he was able to describe how the process approach to information use was an extension and enhancement of the writing process.

The principal showed considerable interest in the project. He valued the process approach as integrating the library media program across the curriculum because of the impact he observed on student learning. He was particularly impressed by the collaborative work of the students. He observed that everyone was on task and that students were giving each other advice. The principal saw merit in the process approach and advocated its adoption.

The assistant principal of the school, who was responsible for scheduling, provided the environment for teaming and the opportunity for team planning. As he stated it, he “helped with the logistics.” By arranging the schedule to allow for the teachers and library media specialist to have preparation and duty periods at the same time, he provided the time for planning and working together during the school day.

As an administrator he gave the project credence. He conducted required formal observations of teachers and library media specialists as they worked with students in the library media center. He showed the students the importance of the project by talking to them about their work as he met them in the course of the school day. In something of an understatement, he said his role was to “show a little bit of interest.” The administrators provided the climate for teaming, the time for planning, and promoted, recognized, and rewarded those involved in the process approach.

The teachers provided the context and content. They worked in conjunction with the library media specialist to design the assignment around the information search process. They were particularly pleased with student engagement and achievement. One veteran teacher related that this was one of the best experiences in her eighteen years of teaching. Teachers concentrated on identifying problems, designing instructional strategies to aid students, and assessing learning.

The reading and study skills specialist guided students in using information, which was found to take more time and energy than anticipated. She served as an additional professional for coaching students in reading, notetaking, and writing about emerging ideas. She was dedicated to the team approach and enthusiastically described the outcome of cooperation: “Everyone was doing the part he or she can do best. No one of us could do this alone.” Her expertise in helping students develop the skills needed to understand information once it had been located made an important contribution to the instructional team.

Last, but certainly not least, the library media specialist provided the resources, defined the information search process, and was the unifying force in directing the program. The principal described her as, “The person who gets it going and keeps it on track.” She initially explained the process approach to the administrators, coordinator, and teachers and then spent a full year laying the groundwork for implementation. In addition, she provided a creative climate in the library media center. As one of the teachers said, “She wants the library used and loves it when the place is crowded.” The library media specialist initiated and facilitated the information search process approach, keeping student learning the focus of concern.

2. A mutually held constructivist view of learning compatible with the process approach that provided the foundation for actively engaging students in problem driven inquiry.

The constructivist view of learning provided a solid theoretical foundation upon which to build the library media program. Constructivist learning was clearly articulated and readily understood by each member of the instructional team. They agreed that students come to a learning situation not as “empty vessels” or “blank slates” but with a range of personal constructs formed from prior experience and that learning takes place by building on what they already know. The team had a mutually accepted philosophical base from which to work.

The members of the instructional team were open and receptive to the process approach because it fit into their way of teaching and the way they viewed learning. Other process programs, such as the writing process and whole language, were established as common practice and formed the basis for building the process approach to information use. One of the school goals was to develop higher order thinking and the information search process was recognized as a way to achieve this goal.

3. A shared commitment to developing skills for lifelong learning and for motivating students to take responsibility for their own learning.

The team was not preoccupied with “teaching for the test.” They had a clear understanding that they were preparing students for the higher-level thinking and problem solving needed for the information age. They were concerned with developing skills for locating and using information for lifelong learning as well as with teaching subject content and concepts.

Student engagement in learning was clearly evident. The team described students as having an emotional attachment to the problem they were investigating. The team was concerned with creating an environment where students would be engaged and totally involved.

The instructional team was involved in creating a collaborative learning environment in which students of all abilities worked together and learned from each other. As the principal noted “everyone was on task.” Lower achievers were working with the others.

4. Competence in designing activities and strategies to improve student learning.

The instructional team was committed to improving learning. They were ready to experiment with method rather than expecting to be handed a packaged formula to follow. As reflective professionals, they used their competence and expertise to design, assess, and redesign the process program.

They were open to innovation and ready to assume professional responsibility for designing strategies and activities. They were willing to let go of old ways of doing things, to take the risk of trying something new, and to accept the extra work involved.

Although the process approach was built on a program already in place, there was a clear notion that this was a different approach. This is a critical point, as one member of the team explained, “We had to rethink the way we had been doing it.” This rethinking to identify features of the assignment, method, and strategies that inhibit or enable the process is essential for a successful program. In this case, their concept of process changed from considering process as moving from source to source in a library media center to the creative process of evolving ideas and thoughts during information seeking.

They focused on student learning and created interventions that helped along the way. They assumed the roles of coaches and guides rather than lecturers. They found that mini-lessons emerging from the stages in the process were more effective than “artificial lessons,” which told too much at the wrong time. All agreed that while the process approach involved more work than

a more prescriptive, transmission approach, it was well worth the effort when the impact on student motivation and learning was considered.

Conclusions

This series of studies has investigated indicators of success in implementing a process approach to information skills in library media programs. It was found that it is easier to identify problems that inhibit success than to identify elements that enable successful program implementation. The data collected through survey questionnaires from library media specialists and teachers revealed three primary inhibitors of implementation: lack of time, confusion of roles, and poorly designed assignments. Those elements that enable implementation, however, were harder to identify in the responses to the surveys.

Therefore, qualitative methods, particularly focus interviews conducted over a period of five years, were used to examine one successful program. Through this case study, ten elements of success were revealed and four underlying factors that enabled successful implementation were identified.

It is important to note that the enablers are not the opposite of the inhibitors. Although this may seem strange, these findings are in keeping with the classic study of job satisfaction where satisfiers were not the opposite of dissatisfiers.⁽¹³⁾ Satisfiers (intrinsic matters derived from the work itself, such as achievement, growth, and challenge) were found to be motivators. Dissatisfiers (extrinsic matters related to the work environment, such as salary and job security) were found to have little motivational potential. Inhibitors and enablers for implementing a library media program may be thought to operate in a similar way. Removing the inhibitors will not necessarily assure that programs will be successfully implemented. Although more time, clarification of roles, and assignments that accommodate the process may improve the environment of a program, these studies indicate that successful implementation is not nearly that simple.

There are profound underlying elements based in sound educational theory in the program of the case study that enabled successful implementation. This study indicates that successful implementation of the process approach to information skills calls for a shared philosophy of learning. It requires development of an instructional team and a break with the traditional concept of one teacher to one classroom. It requires a commitment to developing skills for living, working, and participating in changing technological society. It demands highly competent educators who creatively instruct, guide, coach, and assess students and who design and redesign programs to enhance the learning process. A touchstone for distinguishing a library media program that is well on its way to successful implementation is one that describes problems beyond logistical issues to focus on student learning.

This case study indicates that library media programs that address enablers and inhibitors to implementation are likely to experience success in integrating the use of ideas and information across the curriculum. These programs have potential for making substantial contributions to learning in the information age.

Acknowledgment

I would like to recognize the talented and dedicated faculty and administrators at Manhasset Junior High School in Manhasset, New York, who were responsible for developing the process approach in the library media program, and to thank Judith Taylor, Library Media Specialist, and Carol Kroll, Director of the Nassau County School Library System, for working so diligently to establish this program.

References

1. AASL and Association for Educational Communications and Technology, *Information Power: Guidelines for School Library Media Programs* (Chicago: ALA, 1988).
2. Carol C. Kuhlthau, "Information Search Process: A Summary of Research and Implications for School Library Media Programs," *School Library Media Quarterly* 18 (Fall 1989): 19–25.
3. Judy M. Pitts, "Constructivism: Learning Rethought," in *School Library Media Annual*, Vol. 10, ed. Jane Bandy Smith and J. Gordon Coleman (Englewood, Colo.: Libraries Unlimited, 1992).
4. John Dewey, *How We Think* (Lexington, Mass.: Heath & Co., 1933).
5. George A. Kelly, *A Theory of Personality: The Psychology of Personal Constructs* (New York: Norton, 1963).
6. Jerome Bruner, *Actual Minds, Possible Worlds* (Cambridge, Mass.: Harvard Univ. Pr., 1986).
7. Carol C. Kuhlthau, "Learning as a Process," in *Seeking Meaning: A Process Approach to Library and Information Services* (Norwood, N.J.; Ablex, 1993): 14–31.
8. Carol C. Kuhlthau, "Levels of Education," in *Seeking Meaning: A Process Approach to Library and Information Services* (Norwood, N.J.; Ablex, 1993): 145–54.
9. Carol C. Kuhlthau, *Teaching the Library Research Process*, 2d ed. (Metuchen, N.J.: Scarecrow, 1993).
10. Barbara Stripling, "Practicing Authentic Assessment in the School Library," in *School Library Media Annual*, Vol. 11, ed. Carol C. Kuhlthau, Mary Jane McNally, and Elspeth Goodin (Englewood, Colo.: Libraries Unlimited, 1993).
11. Carol C. Kuhlthau, "The Information Search Process: From Theory to Practice," *Journal of Education for Library and Information Science* 31 (Summer 1990): 72–75.
12. Donald A. Schon, *The Reflective Practitioner: How Professionals Think in Practice* (New York: Basic Books, 1982).
13. Frederick Herzberg and others, *The Motivation to Work*, (New York: Wiley, 1959).