Seeking Meaning

A Process Approach to Library and Information Services

Second Edition

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Roles of Mediators in the Process of Information Seeking

The uncertainty principle provides a basis for a process approach to intervening with users of libraries and information systems. Before exploring the ways that intervention might assist the search process, it is helpful to be aware of users' perceptions of the role of mediators, in general, and librarians, in particular. The studies of the search process revealed a role for both formal and informal mediators. The term mediator, rather than intermediary, is used for human intervention to assist information seeking and learning from information access and use. An intermediary intercedes between the information and the user, but this interchange need not involve any human interaction. A mediator, however, implies a person who assists, guides, enables, and otherwise intervenes in another person's information search process.

Users' Perception of the Role of Mediators

In each of the studies of the user's perspective of information seeking, data were collected on the participants' perception of the role of mediators during their information-seeking tasks. These studies identified two types of mediators, formal and informal. Formal mediators are professionals employed in the information system, such as librarians, and in the case of students, professors and teachers. Informal mediators are other people whom users talk to about their work, including family, friends, colleagues, and subject experts.
The findings of the studies reported in this book revealed a limited role for formal mediators, regardless of whether library users were in an academic, public, or school library. The longitudinal studies further verified a limited role for librarians as described by users. Librarians, in most cases, were considered primarily organizers of the sources and sometimes regarded as locators of sources.

The high school students in the initial study (Kuhlthau, 1983) did not consider librarians to be major contributors to the accomplishment of their information-seeking tasks. Constructs of the role of the librarian in their search process were very restricted. When asked if they needed the librarian’s assistance when researching a topic, only three of the twenty-five students responded either “almost always” or “often.” When asked if they requested help before choosing a topic, the students’ responses indicated that this type of assistance was not considered to be the librarian’s role. None of the students responded that they “almost always” or “often” asked the librarian for help before choosing a topic. Even after choosing a topic, most of the students did not “almost always” or even “often” seek a librarian’s assistance. The students lacked constructs that would prompt them to request mediation from a librarian in even the more traditional tasks of topic selection and information collection. They regarded the library as a self-service operation with little provision for professional/client interaction.

The verification study (Kuhlthau, Turock, George, and Belvin, 1990) of three types of library users, which included 385 people, also revealed a limited use of librarians during information seeking. One of the items on a questionnaire, “Who have you talked to about your project?,” sought to uncover those who were perceived as mediators during the search process. This question may not have revealed who actually was used as a mediator, but it did show participants’ perceptions of who served that function for them. The following four categories were used: friend or family member, peer (one doing a similar task), expert (teacher, professor, or one who knows about the topic), or professional (librarian). Responses indicated that 39 percent of the respondents consulted experts, 25 percent conferred with librarians, 20 percent reported using friends and family, and 13 percent talked with peers. There was no significant change during the search process, nor was there a significant difference by type of library. Although librarians were a group with whom all of the participants in this study had direct contact, they were not identified in 75 percent of the responses. A wide range of experts was mentioned, however, drawing from the community and other contacts.

The case studies (Kuhlthau, 1988c) verified the limited role and disclosed a perception of the librarian as a “last resort” source locator. The librarian was described as a person to go to when one is “stuck.” One person explained that when he is “totally stuck,” he asks a librarian and expects to be directed to a specific source. Another student stated that the librarian helps with “obscure sources, like how to use law books.” And another related that if “I can’t find something, I guess I try to find the easy way out and ask the librarian.” Seeking assistance from the librarian was seen as taking the “easy way out” and not as a legitimate approach to researching a topic or as an integral part of the search process.
The Role of Formal Mediators

Although the role of the librarian was considered to be quite narrow, the participants frequently turned to informal mediators, including parents, siblings, and friends. Many students considered talking about their topics an important strategy both during and after topic selection. In the original study, only five students replied that they "seldom" or "almost never" discussed their topic in the process of selection. After they have chosen their topic, even more students responded that they talked about it with another person or used an informal mediator. Only one responded "seldom," and none of the students stated that he or she "almost never" discussed the topic. Although many of the students felt a need to discuss their topic selection and the development of ideas with others, they did not consider talking about the development of their topics with the librarian. Most of the students revealed that they expected (or were expected) to proceed totally on their own without assistance from formal mediators. They perceived that librarians had little or no role in their search process.

The case study subjects further explained that they wanted to discuss their topics with another person and that they sought help in thinking through some of the ideas that they confronted in the search process. For this help they frequently turned to informal mediators. One related a way that his father assisted him in formulating a focus:

I showed him what I was doing and he would be able to guide me. He would actually help me to organize it. He'd take out a piece of paper and say "OK, these are the ways you are headed, now which one do you want." He would just lay it out for me, but he would try not to influence me.

The study revealed that students attributed a limited, source-oriented role to librarians while they frequently reported making use of a variety of informal mediators in the process of their library research. The case studies confirmed the view of the librarian's role as very limited and source-oriented. The librarian's role was described as directing them to sources that they had difficulty locating on their own. Some students warned that too much assistance might in some way spoil the project by making it less than their own work. Informal mediators assisted students by listening, offering encouragement, and sometimes recommending a strategy. Although the students were seeking guidance in formulation, they wanted the important decisions about the project to remain with them.
Call for Formal Mediators in the Process of Information Seeking

The students seemed to recognize their own need for help and sought process intervention from informal mediators. They frequently discussed thoughts that they were forming about their topic with informal mediators, but they seldom mentioned the specific sources that they were using. At the end of the study, the case study participants expressed a need for an expanded process-oriented role for the formal mediator, either the teacher or the librarian. They revealed some confusion between the role of the teacher and of the librarian as formal mediators. Each participant described a desire for guidance with the process of the search, as well as with the sources of information. The following are examples of the statements from case study subjects made in response to the question, “What further help could you have used?” One person said:

Encouragement. Being able to go to the teacher and say, “This is my topic what do you think.” I don’t know if anyone did that. I did it with friends, but friends don’t know what the possibilities are. . . . They don’t know what information is available. You could say to the librarian, “This is my topic. Do you think I could find enough information? Where should I go?” That would help at the beginning.

This person’s statement, although primarily source-oriented, first and foremost seeks encouragement. When asked how a mediator might be helpful, she responded without hesitation, “encouragement.” Acknowledgment of the uncertainty and encouraging support are primary features of process-oriented mediation. Second, the statement reveals a need or at least an inclination to talk about the topic with someone. Conversation and dialogue facilitate formulation and are important elements in any constructive process. Third is the realization that informal mediators have a limited capacity to help and that formal mediators provide professional guidance. Another student’s statement regarding further help reveals even more need for the introduction of intervention in the search process. As this participant explained:

You have a research paper. It’s due in four weeks. . . . It’s all on your own; I guess, research papers are. . . . They could have done something in between; given us ideas. Teachers are so nonchalant about giving research papers. . . . They don’t discuss it with you. . . . In the meantime, the teacher isn’t really being there. I don’t think they should say “Let me see your note cards.” But they should say, “OK, tomorrow we’ll talk about what you found, if you have any problems, or what
point you are at.” Not pressure you, “Well if you haven’t started just forget it.” Sometimes you haven’t started because you don’t know what you’re about. It would help to know if everyone else was lost, too.

Within this person’s statement is a clear call for process intervention, the need for someone “being there” during the process. “Being there” is further described as including the following: intervention to address what you have found, any problems you may have, and the point you are at in the process.

Both of these people were groping for some formal intervention, beyond mere location of sources, in the process of their search. They indicated a need for more help at the beginning of the process. In the collection stage, after a problem has been well defined and formulated, the library system works fairly efficiently. After most of the uncertainty has been resolved the system functions effectively. But these people seemed to be calling out for help in the midst of the uncertainty and confusion of the earlier stages.

Process mediation would provide opportunities to “talk about” ideas as they emerge. A process approach would acknowledge common experience of uncertainty in the early stages of the process. There is a need for process mediation because such intervention does not increase anxiety by “pressuring you” into premature closure. Caution is recommended against overly indicative intervention, such as the traditional requirement of a thesis statement and outline before the exploration and formulation necessary for collection and closure. There is a call for more invitational intervention, such as dialogue for clarifying emerging ideas, which fosters exploration and formulation. It is in these early stages of the search process that traditional intervention is at its weakest.

Scrutiny of these statements of users reveals a need for intervention addressing two major aspects of information seeking, access to sources and guidance in process. Although the major concern of this work is the process of information seeking, that is not to suggest that help with sources of information is unnecessary. The two types of intervention are connected and interrelated in subtle ways. The tension experienced by users between physical access and intellectual access should be addressed in intervention.

Source and Process

The source versus process debate, which differentiates between help with physical access and help with intellectual access, needs further attention in light of the findings of the research into the information search process that reveal the two inseparably intertwined from the user’s perspective. Source-related
intervention assists with access to information. Process-related intervention assists with learning through the use of information. Uncertainty may underlie both source and process and is likely to be compounded in actual situations of information seeking. Although not the main focus of this research, physical access also factors into uncertainty.

Uncertainty can be caused by a lack of ability to find needed information or being overwhelmed by the quantity of information. Users’ perceptions of quantity as well as their perceptions of ignorance seem to factor in their uncertainty. Studies by Mellon (1986) showed that anxiety is prevalent when students are required to use a library that is unfamiliar to them. Perceptions of quantity may relate to the sheer size of the facility, collection, and information available. Perceptions of ignorance relate to a sense of not knowing how to find information, of not knowing what sources are available, and of the expectation that everyone should know how to search for information. Information access through the Internet may intensify the problem of anxiety and uncertainty related to an overwhelming quantity of information.

The two aspects of intervention, one source-related, leading to access to information, and the other process-related, leading to construction and learning, are interrelated. There is a need to develop strategies for intervening with users that incorporate both informed access and enhanced process. The structure, sequence, format, and depth of information are critical considerations when access to sources is placed within the context of the information search process.

**Structure and Sequence**

Information does not serve the same function in all the phases of the information search process. It follows that for information to be most useful it should be presented in ways that match the user’s cognitive and affective stage in the process of information seeking.

Bruner’s (1973) three basic considerations for learning are the nature of the knowledge to be learned, the nature of the knower, and the nature of the knowledge-getting process. This book concentrates on the nature of the knowledge-getting process. In addition, the nature of the knowledge and the nature of the knower should be considered for providing intervention in the search process.

Structuring a discipline for learning is based on the idea that “any subject can be taught to any person at any age in some form that is honest” (Bruner, 1977, p. 33). To facilitate learning, information is sequenced to present ideas meaningfully for the learner. Thus, Bruner recommended a spiral curriculum, building on a concept introduced by Dewey some years before, which starts where the person is, uses the mode of thinking that he or she possesses, and makes information accessible to the person in the process of learning. This concept underlies the practice of recommending paths through a collection of information and suggesting a sequence for encountering and gathering the information.
Format and Depth

Bruner (1975) extends Piaget’s stages of cognitive development to encompass all learners depending on their point in the learning process, their prior experience and knowledge, as well as their stage of cognitive development. Enactive, the earliest stage, is acting within a concrete experience and learning from that interaction. Iconic, one step removed from the actual concrete experience, is visualization within a vicarious experience. Symbolic, the third stage, is using verbal and written symbols to learn and think. Learning moves through the stages of enactive, iconic, and symbolic as the learner’s knowledge and level of understanding deepen.

When these stages are placed within the context of the stages of the information search process, we begin to see patterns for information presentation. During initiation and selection, enactive information may increase understanding of the concrete aspects of the problem and provide a personal connection. During exploration, iconic information may provide vicarious experience on which to build abstract dimensions. During formulation and collection, symbolic information may extend abstract thinking grounded in a deep personal understanding.

Dale’s (1969) cone of experience, which depicts where various types of media might fall within Bruner’s three categories of experience, serves to illustrate how information may be sequenced by format. For example, enactive media would include exhibits, field trips, and demonstrations; iconic media would include video, film, recordings, and pictures; and abstract media would include all printed materials. Although Dale’s analysis is somewhat dated, the underlying concept may be applied to advanced computer and information technologies.

Two aspects of the presentation of information must be recognized. One is the format of the information, the medium or the package in which the information is presented to the user. The other is the depth of the information in terms of subject matter content. The concrete to abstract continuum addresses both format of presentation and depth of presentation. Although we may be tempted to view the format/depth issue in a simplistic way, at closer scrutiny the complexity of the issue becomes obvious. All iconic presentations are not of equal depth. Some films are unquestionably more abstract than others. Of course, symbolic presentations vary in a similar way. There is no simple pattern for sequencing information into the search process of users. The challenge for information professionals is to consider the concrete to abstract continuum and connections between format and depth for interventions that sequence information in a meaningful way.

Different ways of knowing support different stages of knowing. The information-rich environment of our technological age offers constant access to diverse formats of information in our everyday lives. Understanding the interrelationship of different information media is a critical element in interacting with information users. Many of the more pervasive media are enactive and
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iconic. How does the library that is primarily symbolic connect with other ways of knowing? Intervention may enable people to make connections, to move from concrete to abstract, to recognize the need to know more, to dig deeper, and to gain greater understanding.

Reference and Instruction

Traditionally, libraries offer two areas of service to assist users: reference and instruction. As noted in Chapter 1, these two well-established services incorporate sophisticated techniques for intervening with users. However, physical access within a source orientation remains the primary objective of these services. Following is an examination of reference and instruction to identify where intellectual access within a process approach is being or may be incorporated within these services. Reference is examined on five levels of mediation, and instruction is depicted on five levels of education.

Levels of Mediation

From librarians' point of view, there are a variety of roles in relation to the user that may be thought of as different levels of service. Within reference, five levels of mediation have been identified: level 1, the organizer; level 2, the locator; level 3, the identifier; level 4, the advisor; and level 5, the counselor (see Figure 7.1). For each level, the type of intervention is described with underlying assumptions related to the bibliographic paradigm (source orientation) and/or the uncertainty principle (process approach). The level of mediation is discussed in terms of the complexity of the user's problem and the user's stage in the process. Interventions for each level of mediation are described.

Level 1: Organizer

At level 1, organizer, no direct intervention is provided. Many possible interventions do not include direct human contact. The system as intermediary encompasses everything from the arrangement of the facility, the signs and directions, accessibility of materials, the organization of indexes and catalogs, and all of these factors in relation to advanced technology. The collection of sources is made available through a system of classification and through catalogs and indexes. Little differentiation is made among sources, with the exception of subject classification and identification of format. Physical access is offered in house or from remote locations. In this case, the role of the librarian is to provide an organized collection of sources for independent access.
Table 7.1. Levels of Mediation

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<th>Level</th>
<th>Description</th>
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| 1 Organizer | No intervention  
|         | Self-service search in an organized collection. |
| 2 Locator  | Ready-reference intervention  
|         | Single fact or source search; query/answer |
| 3 Identifier | Standard reference intervention  
|           | Subject search; group of sources in no particular order; problem/interview/sources |
| 4 Advisor  | Pattern intervention  
|           | Subject search; group of sources in recommended order; problem/negotiation/sequence |
| 5 Counselor | Process intervention  
|           | Constructive search; holistic experience; problem/dialogue/strategy/sources/sequence redefinition |

The underlying assumption of level 1 is firmly grounded in the bibliographic paradigm and is based on a concept of certainty rather than uncertainty. The organizer’s ultimate task is to collect and organize sources and to maintain the collection for efficient retrieval. Total attention is given to sources and technology. The individual user and the individual’s problem are peripheral to the organizer’s primary responsibility and concern.

Access to sources is through a self-service search that the user conducts, often without human intervention, through a system of classification. Access is available to the total collection, all at once, all the time. This is the most common use of libraries and databases. An individual comes to the collection with a topic or problem, with the intent of collecting relevant sources. The index gives rudimentary information on sources, such as format, citation, and classification. Little human intervention occurs, with the possible exception of the transaction at circulation. No mediation into the intellectual process of the user takes place. The effectiveness of this level depends on the user’s proficiency in the search and on the complexity of the problem under investigation. Later stages in the search process are more suited to the organizer level than are the early stages.

The organizer’s role, however, underlies all of the other levels of mediation. Without the organizer there would be no access to sources for learning or
for any other purposes. The demands of the organizer’s role, however, have tended to consume the librarian and to overshadow the importance of the other levels of mediation for improving access and guiding use.

Level 2: Locator

Level 2, locator, offers what is traditionally called ready-reference intervention, when the user has a clear, simple question. A single fact or item search is conducted and the answer or the source is provided. The principle underlying this type of mediation is that there is a right answer and a single right source that will match the user’s question: “Tell me what you want and I can give it to you.” Information is treated as a thing that can be produced and provided.

The underlying assumptions of the locator level are that the system is certain, questions are simple, and there is one right answer. The concept of accuracy as a measure of outcome of service fits this level of mediation. Many of the accountability measures for reference service have been built on this concept. How many questions can be answered in an afternoon or evening at the reference desk? The more the better. “Quickly, tell me your question and I will locate the answer,” is the synopsis of this reference approach: a single incident, a simple question, and a matched source.

Locator mediation may include a range of interventions, from a directive to use a specific tool for locating sources, such as a catalog or an index, to the location of a specific answer to a specific question. The user may be present at the reference desk or at a terminal, or the user may be at a remote location on the phone or computer, in an office down the hall, at home, or in another part of the world. The locator’s responses may range from a direction to search for an item to giving an answer. In most instances, a source is located in response to a specific request.

The locator is effective for simple, straightforward, single-issue questions. Although the locator considers the user’s query, intervention centers on locating the right source and not on the subjective complexities of the user’s problem underlying the query. Mediation at level 2 is solidly source-oriented, and the process of the user is not considered. Locator-level intervention is effective with simple routine questions and in the later stages in the search process when a specific question can be articulated and a single source located relating to some particular aspect of a focused topic. The locator is of limited value when there is vagueness, ambiguity, or uncertainty.

Level 3: Identifier

The identifier, level 3, expects to see the user only once during the information-seeking process. This hypothetical user has a topic to investigate or a problem to solve more extensive than the single reference question. A group of sources are identified as related to the topic or subject. These are recommended
as a group in no particular order, provided in no specific sequence. The sources may be from a variety of formats and depths. Typically, when the user comes to the collection with a general topic, seeking information from a number of sources, one comprehensive search is conducted and a "pile" of information is identified as relevant to the subject without consideration for the users' particular point of view, level of knowledge, or stage in the search process. The information is identified usually without any advice on approach or any suggestion of continuing dialogue with the mediator.

The underlying assumption in this level of mediation is the system's point of view and is firmly within the bibliographic paradigm. The system responds to the user's query but does little to accommodate the user's information need. Users' queries are addressed in the collection by identifying sources that match the topic. Information needs are addressed by identifying the sources that relate to the general subject under investigation. Users are assumed to approach problems from a uniform perspective, knowledge state, and stage of process. The identifier level addresses all users in the same way: "Tell me your subject and I will identify the sources that relate to the subject."

Identifiers mediate most effectively when a topic or problem is focused and information is being collected to define the focus. In the early more exploratory stages, Identifiers often overwhelm users with numerous sources and overload them with the sheer quantity of information. There is a compulsion to name every source that might be relevant. That completeness is necessary because there is only one point of contact with the user. Subject access to databases and search engines for the Internet are commonly based in the identifier level.

Identifiers do not address the complexity of the learning process that users commonly experience in extended searches. They often mislead users into thinking information seeking is merely identifying sources and not interpreting them. Users tend to think that they are the only ones experiencing confusion because the certainty of the system is predominant in the identifier's approach. Users are also misled into thinking that the search process does not require exploring and formulating or that the mere collection of sources on the general topic is sufficient for understanding and presenting. Unfortunately, many users encounter severe "writing blocks" when they attempt to prepare to present information gathered in this way. They have not formed new constructs during the search process and have not sought meaning from the information encountered as the search progressed. The "pile of sources" does not necessarily lead to understanding and learning.

**Level 4: Advisor**

Level 4, advisor, is a pattern approach to intervention. The advisor guides users through a sequence of sources on a particular topic or problem. The advisor responds to users who indicate that they have a problem that they intend to investigate in some depth over a period of time. The advisor not only identifies
sources on a topic but also recommends a sequence for using the sources, usually from general to specific or concrete to abstract, with some consideration for the format and depth of the sources. The user asks a complex question or requests information on a topic, and the advisor recommends a way of navigating through the information by using source \(a\), then source \(b\), then source \(c\), and so on. The advisor may suggest that the user return periodically during the search or, once the sequence has been recommended, may leave the user to follow the path independently.

The underlying assumption of the advisor is source-oriented and falls well within the bibliographic paradigm. The user’s problem is addressed within the frame of reference of sources and within a prescribed sequence of use. Therein lies the limitation of the advisor’s mediation. Heavy emphasis is placed on the sources of information, the tools to access the sources, and the appropriate sequence for use of sources. One sequence is recommended for all. The underlying assumption of the advisor level of mediation is that there is one sequence to use sources to address any topic for every user. Users’ problems are expected to be static, with a specific end in sight. The underlying assumption is similar to those of “pathfinders,” which are standardized descriptions of a generic search offered to those who have a similar topic to investigate.

Although advisors move along the continuum of mediation to accommodate a user’s information-seeking process, the individual’s creative learning process is not taken into account. No mention is made of the user’s state of knowledge or stage in the process. The user’s dynamic problem, as that person learns from information access and use, and his or her unique individual process are not addressed. Users are easily misled into thinking that there is one right search for all, no matter what their constructs as they enter the process and no matter what ideas they encounter along the way.

These four levels of mediation provide various forms of source intervention in the information seeking of users. Librarians and the systems they have designed have been quite helpful for source intervention in response to simple queries. Source intervention is also helpful in the later stages of the information search process after formulation has taken place. At that point in the process, users can articulate fairly clearly what they are looking for, and the information system can respond consistently and directly. The system has, in fact, been designed for just this sort of intervention. It is when we get into the more murky waters at the early stages that the system does not respond as well.

**Level 5: Counselor**

Level 5, the counselor, provides intervention into the process of the user. Although the concept of information counselor (Debons, 1975; Dosa, 1978) is not new, the role of the counselor should be expanded in response to research into the users’ perspective on the search process. Dosa (1978) described information counseling as
the interactive process by which an information intermediary (a) assesses the needs and constraints of an individual through in-depth interviewing; (b) determines the optimal ways available to meet such needs; (c) actively assists the client in finding, using, and if needed, applying information; (d) assures systematic follow-up to ascertain that the assistance enabled clients to achieve their goals; (e) develop systematic quality control and evaluation processes. (p. 16)

The underlying assumption is that the user is learning from information in a constructive process as the information search proceeds. There is no one right answer and no fixed sequence for all. The person’s problem determines the intervention. The holistic experience is understood, acknowledged, and articulated as an important aspect of mediation. The user and the mediator enter into a dialogue regarding the user’s problem over time.

The uncertainty principle underlies the counselor’s intervention. Information seeking is viewed as a process of construction rather than a quest for right answers. The user is guided through the dynamic and fluid process of seeking meaning. The recommended sequence of sources of information emerges as the topic or problem evolves in a highly individual way. The depth and format of information is understood from the user’s past experience and the constructs he or she holds. There are many meanings and many focuses within a general topic. The user forms a focus that is a personal perspective on the general topic under investigation. The counselor approaches information seeking as a creative, individual process that is dynamic and unique for each person.

In contrast, mediation in levels 1 through 4 is based on the principle of certainty. The sources are organized for accurate retrieval. Confusion increases when the mediator proposes a definite answer, but the user seeks to learn more about a vague topic or an unfocused problem. Mediation within the bibliographic paradigm may be appropriate for the collection stage or when a problem is clearly defined. But when a person is in an exploration stage seeking to formulate a focus, mediation from the bibliographic paradigm is not likely to match his or her information need.

The counselor establishes a dialogue that leads to a strategy incorporating depth, format, structure, and sequence for learning tailored to the user and her or his task. The mediator expects the user to return periodically to reestablish the dialogue based on his or her emerging constructs. The user redefines the problem with the counselor, determines a strategy, identifies appropriate sources, and determines a sequence for use. A variety of searches may be conducted with different purposes that match the user’s experience at the different points in the process. Strategies are adapted during the process to meet the user’s tasks at a particular stage. Sources are recommended in terms of the user’s state of knowledge and constructs built from past experience. The relevance of sources is expected to change during the information search. The entire search process is considered highly individual, creative, and personal. There is no one perfect
solution, but there are many approaches in response to the creative formulation of each individual.

Use of sources is matched to the stage of the process that the person is experiencing. The type of search conducted may be a preliminary search to get started, an exploratory search for the early stages before formulation, or a comprehensive search for the later stages in preparation for completion. Research indicates a number of innovative intervention strategies, such as search and idea tactics (Bates, 1979); neutral questioning (Dervin and Dewdney, 1986); and chaining, differentiating, and extracting (Ellis, 1989). Strategies appropriate to the stage of the process are recommended, including browsing, skimming and scanning, reflecting, listing ideas, discussing possible choices, and writing short explanations. Four basic strategies for seeking meaning may be applied: recall, summarize, paraphrase, and extend (Kuhlthau, 1981). Recall is to reflect on what is remembered, summarize is to describe in a concise form, paraphrase is to retell in one's own words, and extend is to connect to other ideas or to go beyond the information given. These basic abilities for using information are discussed in Chapter 8.

Levels of Education

Instruction is another well-established library service that may similarly be differentiated into five levels of education: level 1, the organizer; level 2, the lecturer; level 3, the instructor; level 4, the tutor; and level 5, the counselor. Levels of education are differentiated by the number of sessions, the content of instruction, and the type of user problem typically addressed. Education is categorized as being planned for one session, a variety of unconnected sessions, a sequence of related sessions, or holistic interaction over time.

The term education, implying the development of transferable knowledge and capabilities, is used rather than instruction, which refers to more immediate outcomes. Terms currently applied to formal teaching, such as bibliographic instruction, library instruction, and information skills instruction, are used interchangeably when referring to current practice across types of libraries. Education is applied as a generic term depicting any planned instruction related to the use of sources found in libraries as well as the use of information in a broader context of learning. Information literacy has become the overarching term for education programs from preschool to postgraduate.

Although education takes place in all types of libraries, it is given priority in those that are part of educational institutions. Although this discussion centers on school and academic libraries, where instructional sessions are frequently planned for groups of students, it also applies to education, perhaps less formal, given in public and special libraries. The concepts have direct implications and applications for education in all types of libraries.
An important consideration for education programs is whether instruction is integrated into the user's problem-solving situation. Much has been written about integrating library instruction with the curriculum of the school or university. Loertscher's (1982) taxonomy of integration of school library services conceptualizes a hierarchy of involvement and coordination. The user's perspective on the information search process offers a further dimension for defining levels of education. The relationship of instruction to the user's specific problem is defined at each level as well as the integration of instruction with the user's information-seeking process. Education below level 3 is not directed to a specific information need or problem. Levels 3 through 5 are offered within the context of the user's information problem. While levels 3 and 4 may be integrated with assignments from the subject areas of the curriculum, Level 5 must be integrated with the curriculum and educational objectives of the institution. As with the levels of mediation, the levels are heavily source and system oriented, with only the counselor at level 5 addressing the holistic experience of the user in the information search process.

In the following description of each of the five levels, the primary objectives, content of instruction, and some typical approaches are discussed (see Table 7.2).

Table 7.2. Levels of Education

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<th>Level</th>
<th>Description</th>
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| 1 Organizer | No instruction  
Self-service search in an organized collection |
| 2 Lecturer | Orienting instruction  
Single session;  
overview of services, policies, and location of facility and collection;  
no specific problem |
| 3 Instructor | Single-source instruction  
Variety of independent sessions;  
instruction on one type of source to address specific problem |
| 4 Tutor | Strategy instruction  
Series of sessions;  
instruction on one type of source to address specific problem |
| 5 Counselor | Process instruction  
Holistic interaction over time;  
instruction on identifying and interpreting information to address evolving problem |
Level 1: Organizer

At level 1, the organizer gives no instruction. The responsibility of the organizer is to provide an organized collection of sources with access through a system of classification. The organizer's role underlies all of the other levels of education as it does all levels of mediation. Without an organized collection of sources and information classified for subject access, information seeking is severely hampered if not impossible. The library or information system is considered a self-service operation in which users are left to their own devices to learn how to locate and use sources.

The primary goal of library instruction, according to an American Library Association (1980) Council policy statement, is to develop "independent information retrieval," or what Tuckett and Stoffle (1984) refer to as "self-reliant library users." The underlying principle of traditional instruction is the concept that users can be taught to rely on the organizer level of intervention. Traditional source-oriented instruction has fallen woefully short of expectations for developing independence in using libraries and information systems. Library skills have not been found to transfer very well to other libraries, let alone to the broader spectrum of information need. We are beginning to understand the complexity of what users need to know to be self-reliant in their information use. Research into the information search process indicates that users benefit from knowledge of the process of constructing from information along with knowledge about the access to sources of information. Self-reliant users have skill in interpreting information and seeking meaning as well as skill in locating sources and seeking information. Self-reliant users also know when to proceed on their own and when to ask for mediation at a level beyond that of the organizer. Advances in information technology have promoted the objective of the self-reliant user and have fostered the development of extensive programs of information literacy to prepare users for independent access to and use of vast sources of information.

Level 2: Lecturer

At level 2, the lecturer conducts planned orientation in a single session for a large group. A typical orientation session takes place at the beginning of the semester for a group of incoming students. Orientation sessions are offered in all types of libraries for the full range of potential library users.

On the lecturer level, one session of instruction is offered with the objective of orienting users to the location of the library and to the sources within it. A map is frequently used to illustrate the location of the collections and services of the library. In addition, an overview of procedures and policies is given. Lecture methods are most common, accompanied by a tour of the facility. Multimedia productions, in the form of videos and computer presentations, are frequently used. The tendency to tell everything once and for all is often the objective of the
lecturer, frequently overwhelming people with an abundance of new and unconnected facts and directions.

The lecturer level of education is not related to a specific assignment for immediate use but rather consists of a general orientation for future use. By not being integrated into a particular information problem, lecturer sessions tend to be superficial and isolated. They cannot be relied on for a substantial amount of recall and transference beyond awareness of general location and procedure.

Although education at this level serves to orient new users to general location and procedures, the expectation that they will be able to use the library and information systems effectively following such sessions is unlikely to be met. Much depends on the background and experience of the individual user. All too often instruction stops at this level, leaving the person with the feeling that he or she is the only one who does not know how to use the system independently. These sessions should be thought of as a beginning or an introduction for further education on other levels.

**Level 3: Instructor**

Level 3, the instructor, provides instruction on a single source usually related to a specific problem or assignment. A source is identified as being particularly useful for addressing the user’s problem or the problem of a group of users. Instruction in how to locate information using a particular source or database is offered preferably at the time when the content is to be used. A typical example of a lesson at the instructor level is a demonstration of how to use an index to locate articles in journals and current periodicals. An understanding of underlying concepts, such as subject access, is important for transference of learning to other similar sources and systems.

The primary objective of the instructor is to identify appropriate, relevant sources and to teach about their use at the point when the person is ready to apply the learning. Teaching at the instructor level may consist of a variety of independent sessions, each concentrating on one type of source or technology. To be most effective, instruction is given at the time that the source is needed to address a problem, rather than in isolation for some future use. The key to motivation and retention is connecting the instruction to the actual information need of the individual user. Some printed instructions provided for the “typical user” may fall within the Instructor’s level. One example is “point-of-use” instructions for using a source and the technology to access the source.

The instructor connects with the teacher or professor by identifying sources for learning. Some advanced planning is needed to schedule the instructional session, but at this level separate teaching responsibilities rather than team teaching require a minimum of joint planning. The Instructor level is primarily source-oriented and is unlikely to accommodate the experience of the user in the process of information seeking.
Level 4: Tutor

At level 4, the tutor provides instruction in a series of sessions in which advice is given on strategies for locating and using sources to address a specific problem or assignment. At this level, the primary objective of education is to teach a sequence for using sources and a search strategy, perhaps including some advice on depth and format of information in relation to the user’s task or problem.

Tutors direct users on a path through the sources. The metaphor of “navigating” through the literature is commonly applied for describing a sequence of sources. Knapp’s (1966) work on conceptual frameworks provides the foundation for the search strategy approach. The Knapp program was designed to teach students the library as a system of pathways: “Whoever would use the system must know the ‘way’ to use the system. Knowing the way means understanding the nature of the total system, knowing where to plug into it, knowing how to make it work” (p. 130).

Tutors help users to understand the relationship among sources of information. At this level, users may be led through a wide range of sources in the library as well as multiple sources in the larger information environment. Some printed materials may be provided on the tutor level. An example is pathfinders that chart a series of sources to use that are relevant to a general subject.

The full range of experiences and abilities in the process of learning from information access and use is not addressed at the tutor level. As on the instructor level, skill in the location of sources and the use of information technology is the primary emphasis. The reasoning process that underlies independent research is not developed. Most computer-assisted instruction in the form of tutorials to guide use of sources falls into this category of education.

Tutors plan with teachers and professors well in advance of the assignment to integrate library instruction into the course at significant points. The teacher provides the subject context and the learning objective, and the librarian offers the sources to meet the objective. In addition, the tutor has specific instructional objectives related to developing information literacy skills that are to be met within the series of instructional sessions. Tutors and teachers discuss objectives and sources and plan their shared teaching responsibilities.

Level 5: Counselor

At level 5, the counselor provides process intervention that accommodates the user’s thoughts, actions, and feelings in each stage of the information search process. Emphasis is on the process of learning from a variety of sources of information. The primary objective is to prepare users for future situations of learning from information access and use through knowledge of and ability in the process of information seeking. Strategies for working through the stages of
the search process are incorporated with strategies for locating sources of information. Encouragement and support are an important attribute of education at the counselor level.

The counselor's instruction is fully integrated with the user's problem. In school and academic settings, the counselor is an active participant in the instructional team with teachers, administrators, and curriculum planners. The counselor is involved in all phases of designing instruction, from setting goals and objectives, to designing methods and activities, to establishing the means for evaluation. The counselor is a partner in the implementation of the educational plan. The counselor level of education incorporates learning theory into teaching methodology and is based on individual construction and learning. The approach involves using, interpreting, and seeking meaning in information from an inquiry perspective. In educational institutions course assignments drive the information education program. Assignments that center on inquiry lead to higher-level thinking of analysis, synthesis, and presentation, with particular attention to the earliest stages of the information search process. Opportunities are provided for students to understand the search process by reflecting on their own efforts and learning ways that their process might be effective in future information use.

Educational programs are moving beyond a library orientation, single source, and simple navigation approach to the use of information for thinking and learning. The necessity for enabling students to learn the process of a search for information access and use as well as the sources of information has been recognized in elementary and secondary school library media programs (Irving, 1985; Stripling and Pitts, 1988; Eisenberg and Berkowitz, 1990) as well as in academic library programs for university students. Guiding students through the process involves recognition of the crucial early stages of a search when thoughts are being formulated and counseling students in strategies that allow thoughts to develop through the information encountered in located sources (Kuhlthau, 1985b). An inquiry-based learning approach to using school library media centers for learning is an important initiative in K–13 education, with comparable initiatives taking hold in university libraries as well.

The broader view of information education goes beyond location of sources to the interpretation and use of information for learning. Information education centers on thinking about the ideas in information sources. It emphasizes seeking to shape a topic rather than merely getting a right answer. It is concerned with seeking meaning and gaining understanding. The emerging theoretical base for information education, combining learning theory, research in information-seeking behavior, and a broader view of library and information skills, provides a framework for assessing existing instruction and developing the fifth level of education.

At the counselor level the two forms of intervention, mediation and education, merge into one interactive service of guidance. The counselor's challenge is to provide a new kind of intervention that is becoming essential in the technological information age. The vast increase in the amount of information calls for
intervention into the process of information seeking that leads to meaning. The process of information seeking with the object of accomplishing a meaningful task need not require access to all of the information relevant to the topic but only to that which pertains to the particular focus the person has formulated. The focus formed in the early stages of the information search process enables choices of what is relevant, pertinent, and enough to accomplish the task in the later stages. The counselor guides and supports the user, offering encouragement, strategies, sequence, depth, format, and redefinition through exploration and formulation in preparation for collection and presentation.
Zones of Intervention in the Process of Information Seeking

It is clear from the research on the search process that the information seeker goes to others for help at various points in the process. It is also evident that people have a limited view of librarians as mediators, particularly in the intellectual process of using information during the process of information seeking. The analysis of reference and instruction on levels of mediation and education in Chapter 7 reveals that most intervention is based on a source orientation, with little attention to the user's process of construction. When a person confers with a librarian it is usually to ask for advice on how to locate or use a source. Although this is a legitimate use of the librarian's expertise, questions arise about the potential for professional intervention in the stages of the information search process. How do formal mediators become involved in the constructive process of another person? What is the role and function of process intervention in information seeking and use?

Intervention Based on an Uncertainty Principle

Schon's (1982) work on "reflection in practice" offers insight into how professionals diagnose and design intervention to meet an individual's problem situation. The novice practitioner depends on specific rules and procedures, but the expert relies on experience and theory. Other professions, such as law and medicine, have developed rules, procedures, and theories for intervention. The professional's expertise in diagnosing when a client needs assistance and what type of help is needed is an important element in successful professional practice. Librarianship has extensive rules, procedures, and theories related to the bibliographic
paradigm that enable effective intervention in access to sources. Can the information professional's expertise and theory be extended to incorporate uncertainty and process within the user's information seeking and use?

Intervention based on a principle of certainty and order, that is intervention in the bibliographic paradigm, concentrates on matching a person's query with the organized collection. Intervention based on a principle of uncertainty encompasses the holistic process of seeking and using information from the perspective of the individual user. The uncertainty principle suggests new ways of thinking about intervention to accommodate the holistic experience of users in the information search process. Such intervention addresses evolving information needs within the dynamic stages of the information search process to accommodate initiating, selecting, exploring, formulating, collecting, and presenting. This is not to recommend that librarians be involved in every stage of the information search process of every person. On the contrary, it is necessary to determine when it is helpful to intervene and when intervention is unnecessary. The critical question is when is intervention needed and what intervention is helpful to an individual in his or her information seeking and use. Identifying when intervention is needed and determining what mediation and education are appropriate is the professional's art, the role of the reflective practitioner.

The Concept of a Zone of Intervention

Professional intervention calls for diagnosing the user's problem and identifying what intervention would be helpful. Intervention where the individual is experiencing difficulty is warranted. Intervention into the areas where the individual is self-sufficient is unnecessary, as well as intrusive and annoying. The concept of a zone of intervention offers the information professional a way to make decisions regarding interaction with users that is enabling and enriching. The concept enables the professional to analyze the user's task to determine the type of intervention that might be helpful and to tailor service to the user's specific task and information need. Using the framework of the model of the information search process and the underlying theory of uncertainty the professional can differentiate between routine tasks that may be addressed with source intervention and more complex tasks that engage the user in different stages of information seeking and may require process intervention.

The zone of intervention is a concept modeled on Vygotsky's (1978) notion of a zone of proximal development. Vygotsky, the Soviet psychologist whose work had a profound influence on learning theory, developed the concept of identifying an area or zone in which intervention would be most helpful to a learner. The zone of proximal development is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under professional guidance or in collaboration with more capable peers (p. 131).
This concept provides a way of understanding intervention in the constructive process of another person.

The zone of intervention in information seeking may be thought of in a similar way. The zone of intervention is that area in which an information user can do with advice and assistance what he or she cannot do alone or can do only with difficulty (see Figure 8.1). Intervention within this zone enables users to progress in the accomplishment of their task. Intervention outside this zone is inefficient and unnecessary, experienced by users as intrusive on the one hand and as overwhelming on the other.

**Zone of Intervention**

That area in which an information user can do with advice and assistance what he or she cannot do alone or can do only with great difficulty.

*Figure 8.1. Zone of Intervention.*

**Zones of Intervention**

People arrive at the library or information system with different types of information questions and problems and at different points in the information search process. Types of problems and stages of process require a range of interventions. Interventions may be thought of as occurring in five zones (Z1–Z5), as described in Figure 8.2 (p. 130).

In the first zone (Z1), the problem is self-diagnosed, the need for information self-determined, and a search self-conducted. In each of the other zones (Z2–Z5), the person consults the librarian, who diagnoses the zone of intervention from a query or a problem statement. Through an interview the background of the problem is elicited. That background information centers on four criteria identified in the studies of the search process: the requirements of the task, personal interest of the user, time allotted for completion, and availability of information.

The interview seeks to identify the nature of the overall task that prompted the information search, the particular stage of the search process the person is experiencing, aspects of the overall task that are of particular interest to the individual, information that is readily accessible, and the extent and depth of the information available. These interrelated considerations create the context for choices the individual is addressing.
Using the expanded theoretical framework that incorporates the uncertainty principle with traditional bibliographic frameworks, the librarian determines the zone of intervention that is indicated. The person's situation is identified as a source problem or a process problem. A source problem may be addressed with a source or sources of information within the available collection or in the broader information environment. A process problem is more complex, placing the person in one of the stages of the constructive process of seeking meaning and indicating a need for more holistic, ongoing attention.

The first few minutes of the interview are crucial for determining the zone of intervention. Based on professional experience and theory, the librarian makes a diagnosis as to whether the problem is a source problem or process problem. When a problem is identified as a source problem the second through the fourth zones of intervention (Z2–Z4) are indicated. The second zone of intervention (Z2) requires the right source. The third zone of intervention (Z3) requires some relevant sources. The fourth zone of intervention (Z4) requires a sequence for using relevant sources. Interventions in Z2–Z4 are source-oriented and address simple problems that are expected to remain static and be easily solved.

When the user's problem is diagnosed as changing and evolving, the fifth zone of intervention (Z5) is indicated, with the application of a process approach to mediation and education. The librarian enters into a dialogue with the user, and the interaction extends over a period of time. The fifth zone of intervention (Z5) encompasses exploration, formulation, construction, learning, and application in the information search process. The anticipated outcome of the intervention in Z5 is application of the user's new construction to the problem at hand. In addition, increased self-awareness of the search process may be learned and applied to other new situations of information seeking.
The zones of intervention may be thought of as a continuum, with the state of the user’s problem determining the entrance and exit points. The solution to the problem or accomplishment of the task that initiates the information seeking signals the end of intervention. A task or problem may be diagnosed as falling into any of the five zones of intervention. The professional’s judgment is crucial to avoid either over or under intervening in the individual’s information seeking and use.

Levels of Mediation and Education in the Zones of Intervention

The model of the information search process and the uncertainty principle are proposed as a frame of reference for matching the level of mediation and education to the user’s zone of intervention. The information professional assesses the user’s problem, determines what role best fits the user’s need for intervention, and designs mediation and education to match the user’s task. The user’s need for sources and information is incorporated with the user’s need for process intervention. The levels of mediation and education may be used as a basis for designing services that are directly responsive to the task of the user in a process of information seeking.

The levels of mediation and education, described in Chapter 7, parallel the five zones of intervention (see Table 8.1). The organizer corresponds to the first zone (Z1), which requires an organized collection but no direct intervention. The locator/lecturer responds to the second zone (Z2) by offering ready reference and single source or single session intervention. The identifier/instructor provides standard reference intervention, introducing a group of sources and a series of instructional sessions in the third zone (Z3). The advisor/tutor offers a sequence of sources and instructional sessions for using sources in a recommended sequence in the fourth zone (Z4). The counselor engages in process intervention in the fifth zone (Z5). Mediation and education at this level incorporate holistic interaction over time through guidance in identifying and interpreting information to address an evolving problem. The counselor merges the role of educator and mediator in ongoing process intervention.

Table 8.1. Intervention Diagnostic Chart

<table>
<thead>
<tr>
<th>Zones of Intervention</th>
<th>Levels of Mediation</th>
<th>Levels of Education</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z1</td>
<td>Organizer</td>
<td>Organizer</td>
<td>Self-service</td>
</tr>
<tr>
<td>Z2</td>
<td>Locator</td>
<td>Lecturer</td>
<td>Single source</td>
</tr>
<tr>
<td>Z3</td>
<td>Identifier</td>
<td>Instructor</td>
<td>Group of sources</td>
</tr>
<tr>
<td>Z4</td>
<td>Advisor</td>
<td>Tutor</td>
<td>Sequence of sources</td>
</tr>
<tr>
<td>Z5</td>
<td>Counselor</td>
<td>Counselor</td>
<td>Process intervention</td>
</tr>
</tbody>
</table>
Libraries have developed extensive services to respond to intervention in Z2 through Z4. Source intervention of the locator/lecturer, the identifier/instructor, and the advisor/tutor is well established and quite effective in many cases, although perhaps not articulated in this way. Although there is always room for improvement and innovation, librarians take pride in the substantial accomplishments of interventions in these zones.

Process intervention in Z5, however, is in need of development. Although the notion of an information counselor is not new, the identification of the counselor as the provider of intervention in the constructive process of information seeking is an innovative way of viewing library and information services. When existing reference services and instructional programs incorporate a process dimension into the established service, there is a clear delineation of a new direction and not just an alternative way of articulating the traditional approach. That new direction places emphasis on the process of information seeking and the ongoing dialogue that engages the counselor in the user’s unfolding information problem or topic.

**Studies Indicate a Need for Process Intervention**

Longitudinal studies of undergraduates indicate a critical need for process intervention. One of the college graduates who had been exposed to the process approach in high school noted that he was better prepared for college research assignments than other students. He describes a need for Z5 intervention as follows:

I had more exposure to research papers than most high school students. By working with you I learned not to panic if it doesn’t all fall in together the first day you walk into the library. I had a lot of friends in college who were panicked at doing a research paper. I’ll welcome a research paper any day regardless of the subject. To tell the truth I haven’t come across any of my peers who think like that, not a one. When my roommate’s research paper was due last semester, I helped him with it. He doesn’t even know what he is afraid of; maybe of not finding the one article that is going to make his paper. I’ll worry about a paper because things don’t fall into place but it’s not the kind of thing I lose sleep over. I’ve learned to accept that this is the way it works. Tomorrow I’ll read this over and some parts will fall into place and some still won’t. If not I’ll talk to the professor. The mind doesn’t take everything and put it into order automatically and that’s it. Understanding that is the biggest help.
These longitudinal case studies continued as these participants entered the workplace. Two of the participants were interviewed as early career professionals to investigate their perceptions of the search process in two different work environments and their view of a need for intervention. One participant was a securities analyst for an established brokerage firm on Wall Street and the other an attending physician at a rehabilitation hospital in Chicago. These two participants had been interviewed at four- to five-year intervals since they were high school students, and case studies developed from earlier interviews lay the groundwork for this segment of the study.

The physician identified four different types of library services that she has encountered. The first was “just a room with some journals.” The second she described as “a person who has the job of sitting behind the desk and filing things.” The third she explained was a “real library with a librarian who does searches for you.” The fourth library service she described as quite apart from the others. She called the librarian by name and said that, “If I want to do a search now I have Sara do it for me.” In describing the fourth service she explained a different approach in this way, “When I ask Sara to do it, I will give her some key works and she will say ‘well what about this and what about that and let me see what I come up with’ and she will play around with it and then she will get back to me. And that is a lot more helpful and interactive. That is something that is different about the service I have now than what I had before. I don’t know what her degree is in. But it is helpful to have her right there and be able to interact.”

The securities analyst also described an interest in a more interactive role for information providers. He explained that although locating information is no longer the biggest problem for him, he and other workers like him are not completely self-sufficient. They could use help with the interpretive aspects of information seeking, which he sees as essential for accomplishing the more important tasks of the workplace.

These studies of users’ perceptions of information seeking and use indicate the need for library and information services that interact with users to enable the process of gaining meaning within the process of seeking information. Although these participants were from vastly different situations and information contexts, there were marked similarities in their call for assistance in the process of gaining meaning in their information seeking.

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The Counselor in the Information Search Process

The counselor’s role in Z5 intervention is firmly grounded in an uncertainty principle. Understanding that “the mind doesn’t take everything and put it in order automatically” is instrumental in constructing meaning. An important aspect of the counselor’s role is to create an information environment that facilitates gaining meaning.
At the counselor level of intervention the concept of a zone of intervention may be applied within the stages of the information search process. It is in the early, uncertain stages of the search process that the counselor’s services may be particularly enabling. An important zone of intervention is indicated in the exploration stage of the information search process. Studies of the user’s perspective on the information search process reveal that uncertainty is more likely to increase in the stage of exploration and decrease after formulation. The counselor may help users acknowledge and tolerate feelings of uncertainty and anxiety by assuming an invitational mood. The counselor may enable the user to work through the tasks of exploring and formulating as integral to the early stages of information seeking.

The user’s experience of uncertainty in the search process may indicate a zone of intervention for information professionals. Process intervention calls for diagnosing the user’s stage in the information search process and identifying points when intervention is most likely to be helpful. A zone of intervention may be indicated in the user’s perception of the complexity of the task, level of uncertainty, and stage in the information search process. Taken together these three describe the user’s experience in information-seeking tasks that involve a process of construction with stages of increasing and decreasing uncertainty.

Innovative ways should be developed for guiding and assisting people through the stages of the information search process. Mediation and education can be built around a range of strategies indicated in the findings of the studies of the user’s perspective on the process of seeking meaning.

**Strategies for Intervening in the Information Search Process**

The counselor’s role is becoming a critical component of services in all types of libraries. There are some practical strategies for implementing a process approach to information counseling services. Process strategies can be adapted for a wide range of library users, from the youngest child in a school library to the most sophisticated patron of a research library, to the person in the information age workplace.

The most important first step in counseling users is to become keenly aware of different stages in the process of learning from information seeking and use. Begin to listen for clues of early stages of uncertainty in a person’s vague descriptions of his or her problem or topic. Become aware of the undertones and the mood of comments and questions. Be alert to signs of confusion, frustration, and doubt. This undertone of uncertainty is not limited to education and work-related information needs but may be apparent in more leisure and personal pursuits as well. The constructive process of seeking meaning pervades every aspect of human endeavor. Ignorance of the process of seeking meaning frequently underlies the limited choices that people make.
Some of the research methods and instruments used to elicit the user’s perspective on information seeking have been adapted as intervention strategies. Journal keeping has been a particularly useful tool for enabling students to track their process and document their own experiences in the information search process. Search logs have been applied to keep track of the source encountered and determinations of usefulness. Timelines and flowcharts have helped users visualize their process as a unified whole. Process surveys and short pieces of writing at three points in the process have been adapted to help users see changes in their thinking over the course of their information seeking.

Six main strategies for counseling indicated in the findings of the studies of the information search process are collaborating, continuing, choosing, charting, conversing, and composing (see Table 8.2). The strategies are not in any particular order and most likely would be applied simultaneously or in tandem.

Table 8.2. Strategies for Intervening in the Information Search Process (ISP)

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>Collaborating</td>
<td>Working jointly with others</td>
</tr>
<tr>
<td>Continuing</td>
<td>Proceeding at more than one point in time</td>
</tr>
<tr>
<td>Choosing</td>
<td>Selecting what is interesting and pertinent</td>
</tr>
<tr>
<td>Charting</td>
<td>Visualizing ideas, issues, questions, and strategies</td>
</tr>
<tr>
<td>Conversing</td>
<td>Talking about ideas for clarity and further questions</td>
</tr>
<tr>
<td>Composing</td>
<td>Writing to identify what is formulated and what is missing</td>
</tr>
</tbody>
</table>

Collaborating

Collaborating addresses the sense of isolation in the information search process. The information search process need not be thought of as an isolated, competitive undertaking but rather may be considered a cooperative venture, with other people working with the user to enhance information seeking and use. When the counselor takes on a collaborative role as an interested participant in the project, process intervention is the natural result.

Other people frequently serve as collaborators in an individual’s information search process. Students often find that consulting with peers, in pairs or in small groups, at various stages in the search process enables them to learn from each other. Students need not be working on the same project to benefit from peer learning; they may be involved in completely different topics or on different aspects of the same project. Collaboration diminishes the common experience of isolation in research projects and enables people to help one another in the process of learning. A team approach to library research more closely
matches tasks outside the academic environment. Collaborative techniques such as brainstorming, delegating, networking, and integrating are productive activities for information seeking and develop abilities valued in the workplace. Interventions that promote collaboration in the process of information seeking build skills and understandings that transfer to other situations of information need.

Collaborating enables users to try out ideas and develop questions at various stages in the information search process. Collaboration, particularly in the early stages of the process, is a productive strategy for Z5 intervention. When librarians become collaborators they take on an active role of counselor in the process of information seeking and use.

**Continuing**

Continuing addresses evolving information problems rather than queries that can be answered in a single incident with one source. The process of information seeking involves construction in which the person actively pursues understanding and meaning from the information encountered over a period of time. The process is commonly experienced in a series of thoughts and feelings that shift from vague and anxious to clear and confident as the search progresses. Continuing intervention responds to an individual’s complex, dynamic learning process in Z5.

Process intervention that continues throughout the full duration of the information search process not only guides people in one specific research project but also establishes transferable process approaches and skills. Students who are led to view information seeking as a continuing process learn that exploration and formulation are essential tasks for bringing order to uncertainty through personal understanding.

Continuing intervention also addresses the concept of enough. An important concept for addressing complex projects is the notion of what is enough information for closure and presentation. What is enough was a relatively simple notion when a person could gather all there was to know on a topic. The concept of enough is quite a different matter in the present-day information environment. “Enough” relates to seeking meaning in a quantity of information by determining what one needs to know and by formulating a perspective on which to center. The information search process treats the concepts of enough as what is enough to make meaning for oneself.

The concept of enough may be applied to each stage in the information search process. Continuing intervention helps users to decide what is enough to recognize an information need, to explore a general topic, to formulate a specific focus, to gather information pertaining to the specific focus, to prepare to share what has been learned, and to accomplish the task that initiated the process.

Continuing intervention supports people throughout the information search process and guides them in using information for learning and constructing in each stage of the process. Continuing involves understanding that constructing a
personal understanding is a process that requires time. When people become aware of the stages in their search process, they begin to see that inquiry involves more than selecting a topic, collecting information, and reporting. Learning through inquiry involves not only gathering information but also reading, reflecting, raising new questions, and exploring over an extended period of time to construct a new understanding.

Librarians as counselors who implement continuing intervention can help people to think about where they are in the information search process and offer suggestions for proceeding with the particular task they are confronting. Continuing is an important concept for seeking meaning in information-rich environments and is a basic strategy for counselors intervening in Z5.

**Choosing**

The information search process involves active engagement in making choices: choosing a topic, choosing questions and ideas within the topic, choosing sources, choosing information within those sources, choosing what to pursue, choosing what to leave out, and choosing what is enough. These decisions in each stage of the information search process are essential for moving along to culmination. Choosing as a strategy gives people a sense of control over their own search process. In the active process of making choices for themselves, rather than reproducing texts that reflect other people’s choices, users construct their own perspectives and understandings within the information search process.

The four criteria of time, task, interest, and availability form the basis for making choices throughout the process. Choices are made to accomplish the task within the allotted time that are of interest and make use of the information available. These criteria are particularly useful in making choices that lead to the critical decisions of selecting a topic and formulating a focus. The formulation of a focus is the turning point of the information search process that marks the transition from choices that reflect general relevance to choices that reflect personal pertinence. Choices of relevance to the general topic are made at the beginning of the search, and choices of pertinence to the personal perspective are made after focus.

Counselors can help people to see their range of choices in each stage of the information search process. The choices one makes in process of a search are individual and unique for each person and lead to innovation and creativity. In personal construct theory, George Kelly explains that choices that are instrumental in moving the constructive process along are “elaborative” choices. Some choices are more important than others for shaping construction and determining the direction of the search. Choices that lead to formulating a focus are essential for establishing the parameters of the search. Once a focus has been formed, the user has a frame of reference for making choices about what is most useful, somewhat useful, and not useful. Counselors need to respect users’
choices and anticipate individuality in the choices made in the search process. There is not one choice for all but many possible choices, determined by the individual’s intention.

**Charting**

Charting intervention is effective for visually presenting a large amount of information in a compact way. Charting enables the user to visualize the total search process from initiation to closure and to anticipate what to expect in each stage of the process.

One particular charting intervention has been consistently effective for making users aware of the stages in the information search process and for helping them to understand what to expect in each stage. A chart of the model of the search process is used to illustrate the tasks, feelings, thoughts, and actions that are commonly experienced in each of the six stages. The model developed in the research described in this book (see Figure 5.1) may be adopted as an instrument for illustrating the process to library users. The diagram enables users to visualize a sequence of stages in information seeking.

The counselor also may use this chart as a basis for determining the stage that the user is experiencing and to describe the overall process to the user. The model may be prepared as a formal handout or can be simply drawn on a piece of paper. The objective is for users to reflect on the process and to analyze and decide at what stage they would place themselves in the sequence.

For most people a critical zone of intervention is the stage of exploration, after a general area or topic has been selected but before a personal perspective has been formed. By using the chart of the six stages of the information search process, the counselor may help to identify the person’s stage in the process, acknowledge his or her feelings, clarify the task before him or her, and recommend appropriate strategies. For example, people in the exploration stage may find reading for general themes and listing interesting ideas to be most helpful, whereas people in the collection stage would be advised to read for details and to take comprehensive notes.

Conceptual mapping techniques may be applied to charting information and to visualizing emerging ideas. Conceptual maps organize ideas and show connections between disparate concepts in a manner similar to outlining, but with more visual elements. A simple conceptual map begins with a circle or box containing the general topic or main idea. Surrounding circles or boxes are added as related concepts, with lines and arrows connecting the elements in a meaningful display. The visual, nonlinear aspect of conceptual mapping fosters the creative process of connecting ideas and organizing information as a search progresses.

Timeline and flowchart techniques described in Chapter 3 may be adapted for counseling users in charting their own searches. These instruments are most effective for reviewing a recently completed search with a user and reflecting on what went well and what might be improved. However, they may be adapted as
planning instruments as well. The timeline and flowchart reveal different aspects of the search process. The timeline is useful for eliciting thoughts that evolve on a topic in the search process. The flowchart is useful for revealing a sequence of sources encountered and used in the progression of a search. Together they offer two views of this complex, integrated process and enable users to understand their own experience in information seeking.

Surveys conducted at intervals, also, provide a way for users to chart their own search and to track changes in their understanding of both their topic and their search process. The process surveys described in Chapter 4 may be used to record users’ responses at three points in the search process: initiation, midpoint, and closure. Users may compare the responses that they made at the various points to gain a sense of changes in their thoughts, actions, and feelings as the search progressed.

Charting intervention is a creative way to demonstrate common patterns in the information search process, to foster formulation, and to organize ideas for presentation.

**Conversing**

Conversations encourage users to discuss the search process from their own particular perspective. Counselors may encourage dialogue by drawing out the user’s dynamic process through invitational, exploratory questioning, such as: What ideas seem particularly important to you? What particular questions do you have, and what problems are emerging? What is the focus of your thinking, and what are the guiding ideas for your search? What are the gaps in your thinking, and what inconsistencies do you notice in the information you have encountered?

Charting and composing strategies are an excellent basis for conversing with users. The timeline of the information search process is particularly useful for initiating a conversation about the process that the user is experiencing or is likely to experience. The counselor can discuss the sequence of stages in the process with the user and come to some agreement about what stage the user is in. Conversation provides an opportunity for the counselor to acknowledge feelings commonly associated with the particular stage that the user is experiencing. For example, if a selection or exploration stage is identified the counselor would say something like “you are probably feeling somewhat uncertain and a bit anxious at this point; most people do.” If a collection stage is identified the counselor’s comments would be directed toward the user’s personal perspective and particular area of interest.

A counselor should use caution when discussing the stages of the search process and be careful not to belabor the issue beyond the point of being helpful to the user. Merely acknowledging the presence of confusion and uncertainty at the beginning and recommending strategies for proceeding is usually sufficient to get a person started. It is important, however, to suggest that some ongoing assistance may be helpful and to offer an invitation to schedule sessions or meetings for counseling throughout the process.
Conversation gives the counselor an opportunity to listen to the user and to recommend appropriate strategies for working through the particular stage in the process that the user is experiencing. Diagnosis of the user’s stage is important since formulation of a focused perspective is the turning point in the search. The counselor recommends different strategies before and after the formulation of a focus. Prior to formulation a more invitational approach to searching is recommended; there might be exploratory reading and reflecting to better understand the problem. Following formulation a more focused approach of documenting and organizing to solve the problem is recommended.

In the early stages, counselors guide users away from overly indicative strategies that narrow the inquiry without exploring the broader prospects. After a focused perspective has been formed, counselors guard against overly invitational strategies that continue gathering general information rather than limiting the search to information pertinent to the focused perspective. Counseling in the stages of the search process guide users through the entire sequence of starting, exploring, focusing, gathering, and closing.

**Composing**

Composing and conversation go hand in hand to enable the user to focus or formulate a point of view. They comprise a means of documenting and organizing for presentation and application. Conversing enables the user to articulate thoughts, identify gaps, and clarify inconsistencies in the process of the search.

Composing promotes thinking, and journal writing is an excellent technique for advancing formulation in the search process. Counselors may recommend that users keep a research journal in which they record ideas, questions, and connections as they progress through their search. Writing in a research journal is much more comprehensive than jotting down notes on cards or in a notebook. The journal is started when the project is first initiated, but the purpose changes as the search progresses. Users are instructed to set aside ten or fifteen minutes each day or every few days to write about their problem or topic. Instructions might be stated in the following manner:

In the early stages, when you are deciding on what topic to choose, write to clarify or define possible choices. Write about conversations you have about your topic. As you proceed in the process, write your reactions to your readings as well as your thoughts and questions about your topic. Be sure to record all incidents where you made an important decision or discovery. Include the development of a central theme, a point of view, or focus in your thinking. Record any dead end of a path or change in the problem or topic that prompted a new approach.
Users may find it helpful to share their journals with the counselor, or they may want to keep their writings exclusively for their own reflective use. The main objective of the journal is to serve as a tool for formulating thoughts and developing constructs. Counselors may also recommend free writing as a means of assisting formulation. Users are encouraged to write about the focus of their topic or problem at several different points in the search process. These pieces of writing promote private reflection that can help users to make connections in and inferences about the information they have encountered and to see gaps that need further investigation. When the writings are shared with the counselor, they can form a basis for deeper understanding of the user’s evolving information need.

Composing is commonly the outcome or product of the information search process. Composing interventions, however, apply to writing throughout the process as a means for fostering formulation of ideas on an evolving problem from the information encountered in an extensive search process.

**Recalling, Summarizing, Paraphrasing, and Extending**

Counselors can encourage people to collaborate, continue, choose, chart, converse, and compose to formulate the ideas that they find important in the information they have encountered. In addition, users may be counseled to use four basic abilities that underlie information literacy: recalling, summarizing, paraphrasing, and extending (see Table 8.3).

<table>
<thead>
<tr>
<th>Ability</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Recall</td>
<td>Remember ideas from what has been gathered</td>
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<tr>
<td>Summarize</td>
<td>Organize ideas in capsulized form and place in meaningful sequence</td>
</tr>
<tr>
<td>Paraphrase</td>
<td>Retell in one’s own words</td>
</tr>
<tr>
<td>Extend</td>
<td>Fit ideas into what one already knows to form new understandings</td>
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Recalling is thinking and remembering certain features of what has been gathered and read. Memory plays a critical function in the process of using information. With our limited capacity for recall, we remember selectively rather than recalling everything. Recall is based on our former constructs (worldview), which form a frame of reference for selective remembering. What is recalled is a selective process that may differ from person to person. Eliciting personal histories and narratives that relate to the problem is important for counseling users in selecting that which has some personal meaning. Counselors may guide users to make connections with what they already know and to note what fits or contradicts their view.
Summarizing is organizing ideas in capsulized form and placing the ideas in a meaningful sequence. Summarizing orders ideas and events, pulling out salient points or main themes. Not telling all, only what is important, requires an ability to decide what is relevant or pertinent from an individual point of view. Like recalling, summarizing involves selective attention and is based on the person's former constructs. What will be left out is as important a decision as what will be retained. For insight into the complexity of this ability, note how small children want to tell all and have great difficulty choosing parts of a story or event. The decision about what is enough to convey meaning is the difficult conceptual task of formulation. Summarizing involves mentally organizing the information encountered. Our constructs lead us to consider certain ideas as significant and others as less so. There is no one right way to summarize texts. As revealed in the transactional theory of reading, one reader's summary of a text may not match that of an author's. In addition, one reader is likely to summarize quite differently from another. The main objective of summarizing is to organize the information in an abbreviated form by determining ideas that convey meaning. Summarizing prepares information for use by enabling the person to formulate ideas from the information. The task of summarizing is to choose, not everything but enough to convey meaning, and not anything but only that which is important, pertinent, significant, and salient to the individual's formulation.

Paraphrasing is retelling in one's own words the information encountered in the search process. The use of language fosters formulation and prepares information for application. Paraphrasing may be used in enabling recall. Conversing or writing about information gathered may jog memory. One point cues another as the telling occurs. In a similar way paraphrasing may also enable summarizing. The story unfolds within the act of telling. The concept behind paraphrasing is that the reader's words are as acceptable as the author's and more appropriate under certain circumstances. The person is encouraged to break away from the text and to tell the story in his or her own way. When paraphrasing is not valued, copying and plagiarism frequently result. From the earliest age, children's retelling and paraphrasing should be valued and encouraged. Assignments should arise from a problem to be solved that requires paraphrasing ideas rather than a contrived directive that prompts copying word for word from a text. In a similar way, counselors for all types of users should encourage paraphrasing information as a means of understanding and guide users to value their own telling as well as that of others. Paraphrasing, however, may lead to assuming an author's ideas as one's own. It is essential that the origin of the idea be credited and documented. Counselors guide users in determinations of when to quote and how to document sources and in the use of paraphrasing as a powerful ability for formulating within the search process.

Extending is taking ideas from information as our own by fitting them in with what is already known. Extending also involves making connections between the ideas within the information and with information from other sources.
encountered. In this way, thinking about a topic or problem is extended. Extending also encompasses interpreting information and applying it to the problem in the creative process of using information. Extending occurs throughout the search process, not merely toward the end of that process. In fact, all four abilities should be thought of as interwoven in all of the stages in the active process of understanding, rather than as occurring in a sequence. Extending leads from one stage of the process to the next. As new questions arise, further information is needed. In this recursive process the connections lead to formulation of a focused perspective. The counselor develops strategies and techniques for enabling the user to apply recalling, summarizing, paraphrasing, and extending for working through the stages in the information search process.

Process-Oriented Library and Information Services

Library and information services comprise two basic forms of intervention with users—reference and instruction—which have been redefined here as mediation and education. The information search process and the uncertainty principle have implications for diagnosing the users' zone of intervention in each of these services. Traditionally, reference services have been based on sources rather than process. Heavy emphasis on locating the right source and the goal of accuracy detract attention from the more dynamic aspects of information seeking and use. Mediation in the information search process requires expanding the more traditional roles of the librarian from locator, identifier, and advisor for physical access to counselor for intellectual access through process. Awareness of the process in which the user is learning from information seeking and use by exploring and formulating during a search broadens the mediator's scope from concentration on sources to consideration of use.

What is the role of the information professional in an environment where information systems provide direct access to the end user? The user's perspective on complexity, uncertainty, and process indicate a zone of intervention in which the information professional may play an important role in helping with the evolving information need in the process of construction in a complex task. Within an information-rich environment a greater number of users' problems are within the fifth zone of intervention. Library and information professionals should be prepared to meet the rising demand for process services on the Counselor's level to address seeking meaning in an increasingly abundant information environment.

The zone of intervention varies according to the user's task and state of knowledge. In a similar way instruction has been based on learning the sources in an organized collection rather than on understanding the process of learning from information access and use. The very term bibliographic instruction connotes teaching sources without attention to use, interpretation, or meaning. Problems with transference of skills have been recognized as pervasive and have
been widely criticized. By centering exclusively on the sources and the product of a search, the dynamic process of using information has been neglected. Process strategies for exploring and formulating enable students to learn how to learn. Educational programs that offer users an understanding of their search task are better aligned with the natural progression of their thoughts and feelings. Education programs that teach students to become aware of their own process of learning from information prepare them for the process of using information in other situations of an information need. By identifying the zone of intervention the mediator instructs in those areas where the user can learn.

Classification systems are based on the prototype of a generic search rather than an individual process of construction. The organizer’s task of providing all there is, all of the time, in every instance falls within the traditional approach to library and information system design. Information overload and information anxiety are problems resulting from this approach. Designers of online catalogs, end-user bibliographic databases, and searcher training programs should address the question of how the user’s process can be accommodated in interfaces between information systems and users. In this way, the system may be made to accommodate the zone of intervention.

The counselor level of intervention addresses the full range of experience in the constructive process of seeking meaning within the information environment. The counselor is an essential role for librarians and information professionals in the information age. The counselor level is emerging and developing in response to the demands of the information environment. The changing information environment has prompted a reassessment of traditional library and information services and requires information professionals to assume new roles to support users.

The process approach does not advocate throwing out all traditional practices. Rather, it proposes building on existing programs of service to incorporate sensitivity to process to better meet users’ needs in an information-rich environment. The librarian, with a clear understanding of the user’s zone of intervention within a dynamic process, is prepared to expand and change current common practice.