Information Literacy and the Education of School Librarians

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The aim of this article is to gain a better understanding of information literacy as it is put into practice by library science students in Brazil. It shows how library science students accomplish tasks assigned by their professors and is based on Kuhlthau's studies on the process of information-seeking. An attempt was made to identify skills, attitudes, and knowledge related to the development of the various stages of the process. In addition, aspects that did not fit into these patterns were observed. Responses were analyzed to identify patterns of feelings, attitudes, and actions described by the respondents, and results were compared with Kuhlthau's model.

Information Literacy and the Librarian's Role in the Mediation of Information: A Theoretical Perspective

The still incipient state of studies on information literacy and the lack of a precise definition of the term has led authors who deal with the subject to resort to descriptions in order to clarify the concept. One of these descriptions was given in a report of the American Library Association (ALA, 1989):

> To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the need-ed information. Producing such a citizenry will require that schools and colleges appreciate and integrate the concept of information literacy into their learning programs and that they play a leadership role in equipping individuals and institutions to take advantage of the opportunities inherent within the information society. Ultimately, information literate people are those who have learned how to learn. They know how to learn because they know how knowl-edge is organized, how to find information, and how to use information in such a way that others can learn from them. (n.p.)

The concept of information literacy involves, among others, the idea of information skills. According to Kuhlthau (1996), "Information literate users are prepared to apply library and information skills through the course of life" (p. 154). That is, an information-literate person must master the abilities needed to perform the search process.

In Brazil, the term *information literacy* has begun to appear in the litera-ture of library and information science mentioned by authors who perceive a need to enlarge the pedagogical function of the library, or in other words, to construct a new educational paradigm for the library, broadening the concept of user education and rethinking the role of the librarian in the

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learning process (Campello, 2002; Caregnato, 2000; Dudziak, 2003; Hatschbach, 2002). To be able to construct the new paradigm and to contribute to the education of information-literate persons, the librarian himself or herself must be an information-literate person and master the skills needed to perform the search process properly.

The present study adopts an approach based on the studies of Kuhlthau (1996), an American scholar who studies the process of information-seeking from a constructivist perspective, reinforcing the importance of mediation in the learning process, which takes place through the search for and use of information. Such studies were based on learning theories—mainly those of a psychological nature such Kelly's (1963) theory of personal constructs—that aid in understanding the affective aspects involved, as well as in understanding how knowledge is constructed through a complex, active process of reconstructing prior knowledge. Kuhlthau focused on the process of text production, starting with the information that the person finds, a process that typically occurs in libraries.

Kuhlthau's (1996) research was initially based on observing the behavior of users of an information system: high school students who went to their school library to do research work required by their teachers. No matter how well the students were oriented to the library and its resources, they were confused and anxious, expressing negative feelings about the task, the library, and themselves and clearly showing their frustration. The question that occurred to the researcher was: Why did the students find it difficult to begin their work, expressing confused feelings about the task to be done, and showing a lack of confidence in their ability to do it, as well as low motivation and interest? To answer this question, Kuhlthau undertook a series of studies that confirmed the constructivist dimension of learning from information and that offered a model for the process: the Information Search Process (ISP) composed of six stages as follows.

1. *Initiation.* At this point, students perceive that they need information to perform a task; they express feelings of uncertainty and apprehension; they try to understand what lies before them and to recall similar tasks.
2. *Topic selection.* Students are optimistic after they choose the topic; the choice is made with the possibility of success related to factors like interest in the topic and the available information.
3. *Prefocus exploration.* This means looking for general information on the topic to define a focus or a personal point of view.
4. *Focus formulation.* This consists of choosing a specific approach to the task; the focus will generally emerge as the work progresses.
5. *Information collection.* At this stage, the students use the information system more intensely to find information to support their ideas.
6. *Closure.* At this stage, feelings of relief are common, as well as satisfaction if the information search has been successful or of frustration if it has not.

These studies demonstrated that, after choosing the subject, students tended to proceed immediately to the information collection stage, skipping the prefocus exploration stage (when the most adequate strategies would be listing important and interesting topics on the subject, using few sources, and reading and reflecting). They then moved on to the next stage, which would be to find what Kuhlthau calls focus formulation, which would serve to guide the subsequent search for information. Contrary to this, most students immediately began to collect information, prematurely using strategies such as exhaustive listing of sources or detailed copying of passages.

In the course of the process, the students showed changes in their perceptions and expectations of the task. At the end of the process, they showed a desire to know more about the subject even after the task was completed.

An important point of Kuhlthau's (1996) work is the perception that the mediation of formal educators (teacher and librarian) is essential at certain stages of the process because the information system (the library) alone cannot not resolve questions inherent in these stages. At the same time, Kuhlthau found that the students' perception of the librarian's role was limited: librarians were seen as mere source locators. In fact, the students, who were frustrated with the guidance they received, considered the role of the librarians and teachers as formal mediators to be inadequate.

Purposes, Methodology, and Data Collection

In this study we wished to gain a better understanding of information literacy as put into practice by students in the Library Science program in Brazil, verifying if and how students developed research skills during their formal education. Based on the questions raised by Kuhlthau (1996), the purpose was, therefore, to understand the question in the context of Brazilian reality.

In choosing undergraduate students in Library Science, we presupposed that in going beyond their technical function in developing and organizing collections, librarians interact with users, taking on an educational role that consists of aiding users to "establish the route through infinite and conflicting paths of knowledge" (Milanesi, 2002, p. 26). In this sense, we were interested in understanding how Library Science students, future mediators of information, developed their research skills and prepared themselves as librarians to play a significant role in the learning process, enabling people in the context of the school library to use information in order to learn. Therefore, we consider "the library as a school without walls, curricula, and established contents, with classrooms with no defined number of students and the reference librarian seen as the coordinator of the educational process" (Martucci, 2000, p.103).

Specifically, the aim of the investigation was to study the route taken by the students as they performed tasks assigned by their professors, a situa-

tion in which the practice of information-seeking could be observed. We tried to identify skills, attitudes, and knowledge related to the development of the various stages of the process. The study was conducted using a sample of undergraduate students enrolled in the Library Science program at the School of Information Science in the Federal University of Minas Gerais, Brazil (ECI/UFMG).

Librarians in Brazil are educated in undergraduate programs offered by universities. A prerequisite for admission to these programs is a high school diploma (medium level, ages 15-17 in the Brazilian educational system). In addition, candidates must take a written examination that verifies their knowledge of curricular subjects at this level (geography, history, mathematics, etc.). The exam results determine which students are selected. The exam is necessary because in most of Brazilian universities, there is an excess of candidates for university degrees.

Graduates of the Library Science program are qualified to work in every kind of library or information agency because the content of the undergraduate program is basic. There is no specific program for school librarians. Those who choose to work in school libraries in Brazil will be dealing with students from kindergarten (ages 4-6), to fundamental level (ages 7-14), to medium level (ages 15-17). Usually, the role of school librarians is limited: they deal with collections and perform routine activities such as circulating materials and answering simple reference questions. No systematic information literacy programs are in place.

The research used a sample of 96 students, representing 16% of all students enrolled in the undergraduate Library Science program, including students from every semester. Data were collected in the second term of 2003 by means of a questionnaire completed with assistance. The questionnaire was first piloted with 17 students.

The students of ECI/UFMG take five courses in each of the eight semesters that constitute the undergraduate program. Usually, teaching and learning methods include seminars, face-to-face lectures, practical work, and assignments that require students to engage in research and information-seeking. In these assignments, the students choose a topic within the scope of the course subject. The professor provides some basic references and makes himself or herself available should students require assistance.

The participants were those who showed interest in the research (which was previously disseminated among them) and who volunteered to complete the questionnaire. Each participant was asked to choose an assignment that he or she had completed in a previous semester and that he or she considered important for his or her learning. Information was gathered on the assignment and on the feelings, attitudes, and actions associated with working on the assignment, focusing specifically on the beginning and end of the process.

Responses were analyzed to identify patterns of feelings, attitudes, and actions described by the respondents. Aspects that did not fit into these pat-

terns were also observed. Finally, comparisons of the results with Kuhlthau's model were made.

Findings

Initiation

Participants showed predominantly negative feelings at the beginning of the task, especially insecurity, doubt, and confusion associated mainly with factors related to the topic assigned by the professor.

Lack of familiarity with the topic was one cause of the negative feelings. The opportunity for independent learning was not seen as attractive for some students, who were confused, insecure, and harbored doubts "because they didn't master the material," "they were unfamiliar with the topic," and "because it was a new topic and was the first time they had a class with this professor."

Another cause of negative feelings related to the topic was the difficulty in choosing one topic when offered a choice. Difficulty in choosing a topic, along with inexperience with the type of assignment (e.g., monograph or project), created feelings of doubt, confusion, and uncertainty, as well inactivity and despondency. Responses like "I had no idea what topic to choose" or "I didn't know what approach to take" reflect this difficulty, which was expressed by some students even while they were working. In this sense, we presupposed that the problem of topic selection had already been overcome, but for these students, the difficulty with this question, typical of the first stage, persisted throughout the process.

Having prior knowledge of the topic, liking the subject, being interested in it, and/or seeing it as relevant were factors that aroused positive feelings in the beginning. Feelings of security, confidence, and satisfaction were expressed "because it was already a familiar topic," "because I like the subject," because "the topic was interesting" or "because of the relevance of the topic."

Lack of familiarity with the type of work assigned was a factor for negative feelings at the beginning. Asked for the first time to prepare a monograph or a project, students showed feelings of confusion, insecurity, and doubt. Rarely did they feel challenged "because I haven't done that kind of work." On the other hand, the understanding that "a work of this type is very important for academic training" engendered optimism and satisfaction.

Mediation

The professor's behavior was another factor that strongly influenced feelings in the beginning. Clearing up doubts, indicating sources, giving clear instructions, explaining the topic, clarifying the aim of the work—in short, giving direction—all engendered positive feelings. When the professor's attitude motivated and encouraged students, it was also a factor in positive

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feelings. Remarks like "The professor motivated the group," "the professor transmitted this [confidence]," "[I became optimistic] because of the professor's attitude," and "the professor shows a lot of enthusiasm when she proposes something to the class" demonstrate how students began their work feeling optimistic, secure, confident, and satisfied with the assigned task.

On the other hand, when the professor failed to make the student understand the aim of the assignment or was not able to show what was required, feelings of confusion, doubt, and insecurity arose. It should be noted that although difficulty in understanding the purpose of the assignment appeared significantly at the beginning, this seemed to be resolved as the work progressed, as once the assignment was accomplished, this problem was seldom mentioned. Thus students gained clarity about the aim of the assignment gradually: "the aim of the work only became clear in the course of its execution," "the work became clear with the professor's guidance," "only in actually doing the work did I begin to understand it."

Thus the fundamental role of the professor at the beginning of the assignment is evident. This role is shared with colleagues who become frequent interlocutors at this stage, with the mediation of the librarian practically nonexistent as few students claimed to have spoken to him or her about the subject.

Location and Search for Information
Being given references by the professor and knowing beforehand that information for carrying out the assignment was accessible were positive factors at the beginning that generated feelings of optimism and confidence. One student became optimistic and confident because "I had the bibliography in hand" and another "because the necessary information was easily accessed." On the other hand, unfamiliarity with sources because of the professor's lack of guidance or one's inexperience in locating them generated feelings of insecurity, doubt, and frustration. The professor supplying references can be seen, however, as a simplification of the process, because in this case, the student needed only to locate the source and did not explore the information system in its totality, including the identification and selection of sources. Although the final product was positive, the process was facilitated and was not carried out in all its complexity.

The matter of information sources did not seem to be problematic at the beginning of the task, considering that in more than half the cases, the professor supplied references. Only three students, all in the first semester of the program, had negative feelings because they "did not acquire experience in information search." Only two of these could not solve the problem and regarded it as the most difficult during their assignments.

Students' Attitudes
As in the results obtained by Kuhlthau (1996) students at first expressed negative feelings about the task and their ability to perform it: insecurity,

doubt, and confusion arose because the assignment was considered "difficult," "complicated," "complex," "too demanding," and "required a lot of effort" and because it was "an assignment worth a high grade." Students felt insecure because they did not know if they "would be able to do a good job." The sense of unfamiliarity, of having to face something new, was summarized in one student's remark that "one is afraid of anything new."

On the other hand, some factors were related to attitudes of the students that led to feelings of confidence, security, optimism, and satisfaction. These students said: [I became confident and secure] "because I made a great effort to do what was assigned," [I became optimistic and satisfied, although hesitant] "because I believed that I would learn a lot from this task," and [I was satisfied] "because I still hadn't had the pleasure of performing a task like this."

To a lesser degree, aspects such as "confidence in the group of colleagues with whom I would work" and the "possibility of applying my knowledge" were factors for confidence, optimism and satisfaction. On a smaller scale, feelings of insecurity, doubt and concern at the beginning associated with a perceived lack of time to accomplish and present the work.

Task Development

The first action after the task was assigned had to do with immediate, practical aspects: locating and/or reading information sources. When it was a practical task that required visits and/or interviews, choosing the place and arranging the interview were the first moves.

The students who decided first to consult with the professor were those who perceived that the task would be difficult and complex. Not understanding what the professor wanted was not a motive to consult immediately with him or her. This is because, as noted above, the problem was solved in other ways, one of these being "to talk to the group to try and understand what the professor asked for" in an attempt to solve the problem collectively. Conversation with the group also took place as soon as the assignment was given to define the topic, the bibliography, and the form of presentation and to share tasks among the members of the group. Other interlocutors less sought after at this time were people from the place where the task would be performed, classmates, students who had done the same kind of work before, more advanced students, and in one case the librarian.

Actions related to organizing the assignment were rare at this stage: only one student said that his first move "was to try to organize a schedule with data supplied by the professor." Organization of topics and selecting approaches occurred more frequently during the performance of the task than at the beginning.

Actions taken in the intermediary stage of the process revealed two predominant patterns of behavior. The most frequent was searching for information, although it should be noted that this also occurred at the

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beginning. The students consulted a variety of sources to locate information: reference works, the university library system, and local and external databases. Few went directly to the bookshelves, demonstrating knowledge of the resources to locate information available in the library. Students' ability to search for sources was shown also by the fact that the librarian was little in demand at this stage, thus reinforcing the librarian's secondary role in mediation.

Conversations and discussions were also frequent and continued during the course of the work, and doubts were cleared up with people knowledgeable about the topic. At this stage, the role of the librarian became a little more evident as some students asked for his or her help, although this occurred far less frequently than all other actions.

Use of Information Sources

Using more than one source was a general procedure, and students believed that this would enrich and enhance the quality and credibility of the work because "only one author would not be enough to produce a quality assignment." There was also the need to "obtain different points of view on the subject": this was the motive most mentioned for using more than one source for the assignment.

This procedure was also associated with the need to gain better understanding of the topic, to clear up doubts, and to complement, deepen, and broaden the work with a more comprehensive view: "Only one author would not be enough to deal with the assigned topic completely." The students realized that "one text clarifies the other," that [one author] "gives a sequence to the other's ideas," and that "you need to read several authors to have an opinion."

Those who used only one author did so because the assignment was of a practical nature or because the professor supplied a prepared text. Only three students were satisfied with using one author, but gave no explanation for this.

Students tended to follow the recognized model of scientific communication for referencing. They said that they were careful to enclose quotations between quotation marks, identified the author quoted, gave complete references, and balanced direct quotations with paraphrases, all of which shows that they were familiar with the standards for writing an academic text.

Prior Knowledge

Using prior knowledge and experience was a constant. This came principally from courses already taken (generally in the Library Science program and in some cases at other levels of instruction) and assignments and projects carried out previously. Trainee and professional experience were also a source of knowledge, as was earlier reading.

Previous experiences were mainly in information-seeking. To a lesser degree, knowledge of preparing text, citation standards, delegation of func-

tions, experience in working in groups, and knowledge of foreign languages and computers were also used.

Most Common Difficulties

The most common difficulties were related to reading and producing text. Students expressed clearly that writing the final text for the assignment was difficult for them when they knew that the purpose was not just to copy passages. [The most difficult thing] "was to write my own text from the information gathered," "to transcribe the text of the book in my own words," and "to choose the terms that ought to be used in citing certain situations."

Organizing ideas and the text, giving it structure, "joining all the topics in a congruent form," or "joining the different concepts, giving coherence to the work" seemed difficult, but the students understood the need to "structure in an adequate way [their] ideas, observations, and conclusions." This difficulty seemed to be associated with lack of planning of the assignment as few students were concerned at the beginning with making schedules, organizing topics, or defining approaches.

Some were quite specific when expressing their difficulty in interpreting what they read. Selecting and synthesizing information, comparing and contrasting texts, and reaching conclusions were considered difficult, and students expressed this in various ways. The most difficult thing was "to synthesize the infinity of documents on the topic," "to contrast the texts," "the comparison phase and the conclusion of data supplied," "to filter the bibliographical references," "to identify the topic in the sources consulted," and to understand "the conclusion of several texts to make an interconnection."

Questions that should have been resolved at the beginning persisted throughout the process. Choosing the topic and limiting the subject, for example, were difficulties encountered while performing the task, as was understanding the professor's instructions and the aims of the assignment, which appeared in statements of students' who found it difficult "to understand the assignment and do it exactly as the professor wanted."

There were also some practical difficulties about "meeting classmates to discuss the assignment," "finding time to complete it," "achieving a group consensus," "using standards for presenting the work," "oral presentation," "difficulties related to field work," "providing a proper room for presentation," and "not having a computer."

Task Outcomes

The students believed they learned from the assignment; they succeeded in "understanding the subject as a whole," viewing "the topic in a more detailed way," and reinforcing "prior knowledge through a more comprehensive study of the subject." Both quantitative and qualitative changes were evident, with some students claiming that they had modified how they acquired knowledge and how they learned: "my knowledge had been mechanical; in doing the task I learned theory and technique."

A few students clearly expressed the effect of the assignment on their opinions. Some said, "through the material consulted, I managed to have a more critical view of the subject," "I formed a personal opinion of the subject," "it served to confirm my opinion," "I rethought my opinions," or [I formed] "an opinion without much critical content."

The comments demonstrate a development of skills linked to the task: students learned "how to perform the task and about the subject of the task." Other developed skills were organizing knowledge and ideas: "I learned how to develop a research technique and organize the knowledge I acquired" and "after reading about the topic, the ideas became more orderly"; to come to conclusions: "the research made it possible for me to come to specific, personal conclusions on the topic"; to deal with the difference between theory and practice: "I learned to conciliate theory and practice," and "I learned the difference between theory and practice."

Students' comments reflect their realization that with the completion of this assignment, they had acquired experience for future assignments. "The assignment was important, as it served as a basis for how to undertake others" and "from this experience I may suppose that now I know how to think about all the stages of the technical project for any objective whatsoever."

A variety of attitudes were associated with what the students thought they had learned, perceiving the importance of what they had studied and the problems they would face: "how important and difficult it is to educate readers" and "the importance of preservation of library materials."

Perception of the importance of the topic was a frequent observation. Students commented how the assignment had led them to perceive the importance of the topic studied: "the importance of studying geography" (about an assignment on the sources of geographical information); "one sees how much the bibliographical sources are important in performing different tasks" (an assignment on general sources); and "the databases are excellent sources of information" (a research assignment on databases).

Some students commented on their perceptions of the difficulties of performing the task: "I saw the difficulties in developing a thesaurus," "I understood the problems, mainly with the terminology of the field," and "it is impossible to find all the necessary information."

Fewer comments referred to the interest that they had begun to take in the topic: "I decided that I really like thesauri"; to what they still needed to learn: I aw that there was a lot more to learn"; to the possibility of joining theory and practice: "besides practical knowledge I was able to join it to theory"; and to their change of attitude: "it changed my concept of research."

The End of the Assignment

The students reported clear changes of feelings at the end of the assignment. Relief was the most general feeling, owing to the sensation of an obligation fulfilled, of having succeeded in completing the assignment, of

being free from the pressure that it represented. Yet many students showed more than this: they also had feelings of security, optimism, confidence, and satisfaction when they realized that they had completed the assignment successfully, that its purpose had been achieved, and that they had done something advantageous. They experienced positive feelings because they liked the result, realizing that their work was "very well done," that they were capable of "doing a good job," that they "had done their best." Another reason for feelings of security, optimism, confidence, and satisfaction was the realization that at the end of the assignment, they had learned something and had seen new possibilities: "the task opened up new paths for me, it is a step in the direction of my future training." The possibility of applying knowledge acquired during the assignment was also a factor for positive feelings when the student saw that the project "was accepted at my job, there was a real response, an application."

Although at this stage the professor's role was more important than at the beginning, he or she was still an important factor in arousing feelings of optimism, confidence, and satisfaction. The students were concerned about the professor's opinion of their work, saying, "It is always good to see the results of one's work, even more so when it is valued by the professor." They experienced feelings of satisfaction and confidence because they were able "to do everything very well, even with the little time we had to meet, and the professor loved the work" and because they were happy about "doing this work and about the professor's comments on the subject." Some students were especially worried about the professor's reaction and were relieved to have "attained the objectives proposed by the professor" and "corresponded to the professor's expectations."

A pragmatic reason for having positive feelings was related to obtaining a good grade, but this was peripheral and associated with other factors such as liking the topic studied and feeling that they had done a good job. To a lesser extent, other factors appeared such as "involvement in the task," "the possibility of sharing," and seeing the work accepted by interlocutors when "the conclusions were accepted and a fantastic debate ensued in the classroom."

The perception that "knowing more is needed" also arose at the end of the process, generally associated with feelings of doubt. In addition, the students noted with relief and optimism their own difficulty in performing the task and their understanding that they had faced a challenge. Although positive feelings predominated at the end of the assignment, many of these were accompanied by negative feelings, especially doubt and insecurity. Some students, however, finished the assignment with only negative feelings, mainly insecurity, as a result of dissatisfaction with the result: "my work did not follow the norms, it was too short"; of difficulties with the topic: "the subject was complex and there were no expository classes," and "it was a new subject and a graded one"; or "because doubts persisted that could not be cleared up." Students felt frustrated when they perceived lack of assistance: "a stressful task, with no help"; or because of dislike of the topic: "I still don't like mathematics."

These persistent negative feelings at the end of the assignment did not seem to be related to the grade received as all these students received above-average grades. Students who had these negative feelings were part of the group who claimed that they had not learned from the assignment for various reasons: "the content had already been covered in high school," "I was interested in the grade," "very superficial learning," and "my memory for math only worked while I was performing the task." Two students, although they did not respond affirmatively to the question "Did you learn anything from the assignment?" were somewhat laconic in their comments on their learning experience: "one always learns from an assignment" and "every assignment contributes to broaden our knowledge."

Another factor related to students' perception that they did not learn from the assignment had to do with the difficulty with the topic ("very complicated, a very advanced topic for my degree of understanding"), as well as the affirmation that "the concern for pleasing the professor was detrimental to learning."

Final Considerations

The predominance of negative feelings at the beginning of the process confirmed Kuhlthau's (1996) principle of uncertainty, which results from gaps in understanding meanings. This occurred clearly in the students' perception of their unfamiliarity with the topic. A small number squarely faced this unfamiliarity and developed attitudes of positive expectation, a taste for challenge, and the possibility of learning something new. Most had negative feelings, which were overcome by the end of the assignment. This hesitant beginning seems to indicate that students need support to prepare for independent learning. If the aim of education is to teach students to learn how to learn and to build on their learning from prior experiences, mediation at this stage is fundamental. It may help students to develop attitudes of positive expectation; as it was, they tended to anticipate problems, which created a climate not conducive to learning.

The professor was a key element at the initial stage. He or she represented the interlocutor who motivated and guided the students. The professor can lead students toward being aware of the real problems that they will face, preparing them to endure feelings of uncertainty common to this stage, and to understand that during the process these will tend to disappear.

During this process, to the extent that the work progressed, objectives became clearer from the exchange of ideas among the group, the professor, informal mediators, and less frequently the librarian. The insignificant role of the librarian became evident, which confirmed the conclusions of Kuhlthau's (1996) studies, which also found the teacher's mediation inadequate. In the present study, the role of the professor was significant in the beginning, grew less so as the work progressed, but persisted throughout the whole process.

Consulting information sources was a frequent procedure at the beginning stage. The usefulness of knowing how to locate these sources became evident. This was a skill mastered by most of the Library Science students, who saw that previously acquired skills for seeking information were useful experience for performing this task.

There were no indications of a more precise development of the topic, that is, the choice of a more specific approach that in Kuhlthau's (1996) model is called formulation. The students understood from the beginning of the assignment that there was a direct route to collecting information, probably reinforced in many cases by the professor's supplying references. Two important stages were missing: exploration and formulation, which are responsible for the definition of what Kuhlthau calls the focus of the work.

Writing the text was the greatest difficulty experienced by the students. They knew that they should not copy from consulted authors, but rather produce their own text in their own words. The processes required for this purpose (interpretation, synthesis, contrasting information, comparison, and selection) were seen as difficult and probably made more so by the lack of prior organization of the task and a clear definition of the focus.

The positive feelings predominating at the end of the assignment were associated with the recognition that learning had taken place, with success also being a factor for positive feelings at the end.

The results indicate that future librarians are not sufficiently prepared to perform the kind of research tasks for which they will be expected to act as mediators for others in the process of learning from information. Practice by means of undertaking academic tasks constitutes one learning strategy for improving their preparation, although the process, not the final product, must be emphasized. The formulation stage must be better mediated by professors, who can help the students to establish a focus for their work and to plan the topics to be researched. The search for information sources should be done so as to allow the practice of more complex tasks such as identification and selection, not only location. The more evident difficulties experienced by students such as interpreting and writing the text should receive special attention from professors.

The Library Science students who participated in this research showed that they understood the advantage of independent learning when they observed that "often the task is more enriching than classes themselves," that they learned "to pursue answers," and that "to work alone allows more time to formulate knowledge." In this sense, their learning experience went beyond the acquisition and broadening of knowledge. The completed assignment allowed them to expand their interests: "become familiar with related subjects"; to stimulate questions: "to study a new topic always stimulates questions and helps learning"; and to enlarge the need for information: "it brought up new questions, enlarging my need for information," which showed the development of their information literacy skills. These benefits point to the importance of library science schools integrating

the concept of information literacy into their learning programs. The library science school curriculum needs to include knowledge of theories and methodologies that will support information literacy learning and also to give students opportunities to exercise independent learning through a learner-centered approach in order to prepare future librarians to play their particular pedagogical role properly.

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Author Notes

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Questions

Which school semester are you attending at present?

In which school semester the research assignment was completed?

What was the subject of the assignment?

Was the subject handed by the professor?

Did the professor provided bibliography?

What grade did you get?

Did you work in a group with other classmates?

1. Was the objective of the assignment clear since the beginning? Make any comments on your reply.

2. When the assignment was proposed what were your feelings? (Sign more than one option if necessary).

   ☐ Confident   ☐ Frustrated
   ☐ Confused   ☐ Optimistic
   ☐ Uncertain   ☐ Doubtful
   ☐ Sure   ☐ Satisfied
   ☐ Others

3. Why did you have these feelings?

4. What was your first action?

5. At the beginning of the assignment did you talk to somebody about your topic? To whom? (Sign more than one option if necessary).

   ☐ the professor   ☐ the librarian
   ☐ classmates   ☐ group of classmates
   ☐ other colleagues   ☐ another persons

6. Mark the items that are related to your actions in the intermediary stage of the assignment:

   ☐ to discuss about the topic
   ☐ to ask the librarian for help
   ☐ to search the university bibliographic database
   ☐ to search the periodical database
   ☐ to go directly to the book-shelves
   ☐ to choose a focus for the assignment
   ☐ to confer with people who know about the topic
   ☐ to use reference works
   ☐ to search full text databases
   ☐ to organize a list of topics to be included
   ☐ to search a full text periodical database

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7. Did you use more than one author in your work? Why?

8. In the course of your work did you recall previous knowledge/experiences? Which ones?

9. Did you quote the authors you cited?
    When quoting did you:
    - use quotation marks?
    - identify cited authors?
    - include the reference of the cited works in the bibliographic list?
    - use direct citations and paraphrases properly?

10. In the course of your work what was the most difficulty task?

11. At the end of your work did you form your own opinion on the subject?

12. Did you learn anything from the assignment? Make any comments you think it's significant to the answer.

13. At the end of the assignment what were your feelings? (Sign more than one option if necessary).

☐	Confident	☐	Frustrated
☐	Confused	☐	Optimistic
☐	Uncertain	☐	Doubtful
☐	Sure	☐	Satisfied
☐	Relieved	☐	Others

14. Why did you have these feelings?