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MAKING RESEARCH MAKE SENSE:

Guiding College Students into Information Literacy
Through the Information Search Pro.cess

Jeffrey M. Mortimore

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Introduction

Bennett College for Women is a private, four-year college serving approximately 725 African-American women in Greensboro, North Carolina. Because of its unique demographic as one of only two all-female, historically black colleges in the United States, Bennett College attracts women from across the country and the world with a profound diversity of talents and preparation for undergraduate study. The Thomas F. Holgate Library supports the research needs of the college through an active instructional services program at the undergraduate level. While the library has provided library orientation and traditional bibliographic instruction for decades, during the 2007/8 academic year, and with the support of a Mellon Foundation grant, the library staff undertook a significant overhaul of its instructional services to better align with information literacy best practices and to respond to the diversity of preparation among its student body.

This overhaul has been all-encompassing and continues today. Prior to the fall of 2007, the library provided an average of ten instruction sessions per year, reaching a limited number of students to equally limited effect. Through careful retooling of the library's website, print and electronic resources, instructional curriculum, marketing, and faculty training, the library staff has significantly increased the instructional services program's presence in courses and in the academic life of the college. For instance, during the 2009/10 academic year, the library provided 103 faculty-requested and drop-in instruction sessions for a 930% increase over 2006/7. Similarly, during this period print reference item use has increased 810%, item views in the library's online databases has increased 715%, reference questions have increased 272%, the library door count has increased 153%, and general circulation has increased 145%.

Through these overhaul efforts, and by significantly increasing the number of faculty and programs for which the library provides instructional services, the library has ensured its role in the college's ongoing General Education Curriculum revision, as well as its Quality Enhancement Plan for re-accreditation with the Southern Association of Colleges and Schools. As part of this plan, the library currently provides multi-session course-integrated information literacy instruction for every section of the college's required first-year literature and writing seminar, ensuring that that the library reaches every incoming student at least twice during her first two semesters at the college.

Central to the success of these program revisions has been a careful retooling of the library's curriculum for course-related and course-integrated instruction. Pursuant to bringing instruction into line with information literacy best practices, the library staff has addressed two critical areas: 1) increasing student motivation and 2) engaging students in reflection about the research process. First, following the lead of Jacobson and Xu (2004) and Gibson (2006), and drawing upon studies by Cokley (2000, 2003), the library staff has implemented a series of instructional and service strategies for supporting students' academic motivation in the research setting. These findings have previously been reported (Mortimore & Wall, 2009) and recommend the importance of perception of faculty encouragement to African-American college students' academic self-concept.

Second, the library staff has sought to develop an outline for information literacy instruction that balances the requirement to introduce students to the research process with the traditional time, technological, and course-related constraints placed upon library instruction. The theoretical model upon which this outline is based is Kuhlthau's Information Search Process as articulated in *Seeking Meaning: A Process Approach to Library and Information Services* (Kuhlthau, 2004). The present report investigates this process and shows how the library staff has integrated this model into its one-shot information literacy instruction to positive effect.

One-Shot Instruction and the Information Search Process

Whether library practitioners like it or not, the one-shot, 50-75 minute library instruction session remains, and likely will remain, the bread and butter of most undergraduate instructional services programs. For instance, while the Holgate Library staff has made considerable strides in increasing collaboration with faculty and in the number of multi-session sequences within courses, over 65% of faculty-requested instruction sessions offered during the 2009/10 academic year remained one-shot. The constraints that one-shot instruction places on meeting information literacy objectives are well documented and mitigate the effectiveness of instruction when measured in terms of course outcomes (e.g., Coulter et al., 2007).

Ideally, information literacy instruction should involve students in critical thinking about the process of research. However, such critical thinking may be difficult to achieve within 50-75 minutes. Often there is little opportunity for follow-up with students unless they voluntarily contact a librarian; faculty generally expect emphasis on resource coverage during sessions; and one-shot instruction is less likely than multi-session instruction to be coordinated with particular research assignments. Most published studies are of little help here. On the one hand, a majority of studies start by assuming close faculty-librarian collaboration, collaborative assignment development and integration, or multi-session instruction. Indeed, given her

emphasis on faculty-librarian "inquiry teams," Kuhlthau's own model for collaborative instruction articulated in *Guided Inquiry: Learning in the 21st Century* (2007) does not appear to address the one-shot context at all. While Kracker (2002) has shown the benefits of including explicit standalone research process instruction in library sessions, still her approach seems better suited to multi-session contexts.

On the other hand, while an increasing body of research has turned to technological innovation and integration where limited face-to-face instruction is unavoidable (e.g., Bell & Shank, 2007; Daugherty & Russo, 2007), such studies do not address contexts where these technological resources are unavailable. In order to meet the objectives of information literacy instruction while accommodating the traditional constraints of the one-shot format, sessions require a considered framework for balancing resource coverage with the introduction of the research processes. In order to address these challenges, the Holgate Library staff has sought to adapt Kuhlthau's Information Search Process as a conceptual framework for organizing one-shot instruction.

Kuhlthau offers the Information Search Process as a heuristic for understanding the stages through which any individual passes as she seeks to fulfill an information need (Kuhlthau, 2004, 44-51). As the individual addresses and resolves her information need, Kuhlthau argues, she passes through six stages of varying emotional certainty and confidence, as well as cognitive clarity and focus. At every stage, this process may be characterized in terms of three realms: the cognitive (thoughts), the affective (feelings), and the physical (actions). By acknowledging and validating the thoughts, feelings, and actions that the individual is likely to experience as she attempts to resolve an information need, Kuhlthau claims, librarians are more likely to foster positive, lasting research practices (86).

The first stage identified in the Information Search Process is task initiation, during which the individual recognizes a need for information in order to complete a task or assignment (44). This stage is often accompanied by feelings of

uncertainty and apprehension, and involves thinking about the task pursuant to comprehending what needs to be known or done to achieve success. The second stage is topic selection, during which the individual selects "the general topic to be investigated and the approach to be pursued" (46). During this stage, the individual's uncertainly tends to lessen, and is replaced by optimism as she prepares to begin her research. The third stage, prefocus exploration, involves the individual in research "on the general topic to extend personal understanding and to form a focus" (47). During this stage, Kuhlthau explains, "information encountered rarely fits smoothly with previously held constructs, and information from different sources commonly seems inconsistent and incompatible." Because of this, the individual's optimism is likely to be overcome by feelings of confusion, doubt, uncertainty, and sometimes threat. It is during this stage that the individual is at greatest risk of losing motivation, and of falling back into the inertia of bad habits (e.g., relying solely on *Wikipedia* or other non-peer-reviewed sources).

The fourth stage is focus formulation. During this stage, the individual formulates from the information she has encountered a focused perspective on her topic. As the individual's focus increases, she tends to experience "increased confidence and a sense of clarity" (48). This stage, Kuhlthau claims, "is for many the turning point of the search process," when researchers begin to feel confident in their work and with their ability to assess and assimilate information as it pertains to their topic. The fifth stage, information collection, is when the individual's focused research begins: "The user, with a clearer sense of direction, can specify the need for relevant, focused information to librarians… thereby facilitating a comprehensive search of all available resources" (49). At this stage, as the individual realizes the scope of the task at hand, confidence, interest, and motivation increase, and uncertainty subsides. Finally, the sixth stage is search closure. During this stage, the individual's attention turns from research to presentation, and "there is a sense of satisfaction if the search has gone well or disappointment if it has not" (50).

Interpreted for students during the one-shot instruction session, Kuhlthau's Information Search Process provides a simple and clear model for communicating to students the experience of academic research. By translating these stages into generic session modules and presenting topics and resources accordingly during one-shot instruction, the Holgate Library staff involves students in reflection on the research process while balancing in the presentation of resources and library policies and procedures. Additionally, when taken as a general heuristic for understanding the experiences of students as they engage in research, the Information Search Process has proven a useful scheme for engaging students' thoughts, feelings, and actions during these sessions. Figure 1 shows the generic outline used by the library staff for coordinating the presentation of these stages with topical and resource elements. This outline is sufficiently under-determined to be adaptable to a range of instructional settings and faculty's content requests.

During each one-shot instruction session, the library staff involves students in reflection on the process of research through five session modules which correspond to and translate the stages of the Information Search Process. Beginning with task initiation, the librarian engages students in the experience of receiving a research assignment and the thoughts and feelings attending this. By addressing students' feelings of uncertainty and apprehension, the librarian validates their experiences, establishes empathy between herself and the students, and places students' thoughts and actions into a context of realistic expectations. By establishing this context, the librarian may segue into stage-appropriate session topics and resources, in this case a discussion about the pitfalls of the Internet.

Kuhlthau's second, third and fourth stages (topic selection, prefocus exploration, and focus formulation) are translated into the session modules "Selecting your topic" and "Finding Your Focus," during which the librarian introduces the general topics of general vs. subject, popular vs. peer-review, basic reference resources for developing topic, and periodical resources for developing focus. Kuhlthau's fifth

Figure 1: *Kuhlthau's Information Search Process (ISP) Stages with Corresponding One-Shot Session Modules, Topics, and Resources.*

Kuhlthau's ISP Stage	Instruction Session Module	Instruction Session Topic	Resources Covered
I. Task Initiation	Getting Your Assignment	Resist going to the Internet —	
II. Topic Selection	Selecting Your Topic	General vs. Subject Resources	Gen. & Subj. Encyclopedias
III. Prefocus Exploration	Finding Your Focus	— Popular vs. Peer-Reviewed Sources	— Periodical Databases
IV. Focus Formulation		— Periodicals & Books	— Library Catalog & Electronic Books
V. Information Collection	Digging In	— Evaluating Websites	— Select Websites
VI. Search Closure	Putting It All Together	— Plagiarism — Proper Citation	— Acknowledging Sources — Citation Styles

stage, information collection, is addressed under the session module "Digging In," where the librarian transitions from periodical literature to the more extensive and refined monographic literature and evaluating websites for research. Stage six, search closure, is addressed under the module "Putting It All Together," where the librarian engages students in reflection on plagiarism and the ethical presentation of information through proper citation.

Throughout one-shot instruction sessions, the library staff is careful to keep focus on the research process—and students' attending thoughts, feelings, and actions—rather than particular resources. While this emphasis may appear contrary to the purpose of one-shot instruction, the expectation is that, by focusing on students' research anxiety through meaningful engagement with the research process, librarians may mitigate the negative effects of students'

confusion, doubt, and uncertainty, especially during task formulation and prefocus exploration (Kuhlthau, 2004, 84-86). In addition, the library staff has coordinated the library's online subject and course guides, standalone *Research Strategies Workbook*, and handouts and quick guides to correspond to session modules, supporting synergies between the content of one-shot sessions and the library's other print and electronic curricular supports.

Assessment

Since adopting this generic outline for one-shot information literacy instruction during the fall of 2007, the Holgate Library staff has measured its effect on session and course outcomes. Assessment has included direct and indirect measures, and points to the value of the library's adaptation of the Information Search Process for framing one-shot instruction. For instance, during sessions, students are administered a pre-

test and post-test to measure immediate attainment and retention of information literacy concepts and skills (see Appendix). Tests are administered to every session where time, format, and content permits, and data are analyzed for frequency of correct answers per question and for the total number of questions answered correctly per test. Questions ask students to contemplate a number of research tasks and show proficiency in identifying appropriate resources and their features, criteria for determining the quality and fitness of information, and standards for the ethical use of information. While pre-tests and post-tests are not identical, questions on each test are designed to assess corresponding concepts and skills, thereby permitting direct comparison of results.

Since adopting session pre-tests and post-tests in the spring of 2008, results show a marked increase in correct responses between pre-tests and post-tests, suggesting students' improved understanding of the research process and resources over the course of instruction. For example, as Table 1 shows, for the 2008/9 academic year, students displayed a positive increase in correct responses to all corresponding assessment questions.

Table 1: *Academic Year 2008/9 Frequency of Correct Responses per Corresponding Pre-Test and Post-Test Question and Percent Change*

Question #	Pre-Test % Correct (n=141)	Post-Test % Correct (n=123)	Percent Change
1	40%	52%	**30%**
2	79%	82%	**4%**
3	45%	59%	**31%**
4	25%	39%	**56%**
5	17%	63%	**271%**
6	10%	52%	**420%**
7	39%	60%	**54%**
8	30%	72%	**140%**

Table 2: *Academic Year 2008/9 Total Number of Correct Answers per Pre-Test and Post-Test and Percent Change*

# of Correct Answers Per Test	Pre-Test % of Total (n=141)	Post-Test % of Total (n=123)	Percent Change
0	6%	1%	**(83%)**
1	17%	2%	**(88%)**
2	33%	11%	**(67%)**
3	28%	8%	**(71%)**
4	28%	31%	**10%**
5	18%	33%	**83%**
6	9%	38%	**322%**
7	4%	35%	**755%**
8	1%	17%	**1600%**

During the 2009/10 academic year, the library staff initiated a programmatic assessment of the instructional services program to measure students' attainment of information literacy skills over the course of their time at the college. Early in the fall semester, the library staff administered programmatic assessments in the form of pre-tests to six upper-division courses. Assessment questions corresponded with the library's standard pre-tests, permitting direct comparison of performance on each question. During the fall 2009 semester, the library staff collected thirty-four programmatic assessments and compared these with all fall 2008 session pre-tests.

Table 3 shows the total number of correct responses per completed fall 2008 pre-test and fall 2009 programmatic assessment, and the percent change between assessments. As the percent change column of Table 3 shows, the total number of fall 2009 programmatic assessments with four or more correct answers increased significantly over fall 2008 pre-tests. Again, this positive shift in total correct responses between fall 2008 pre-tests and fall 2009 programmatic assessments suggests outline efficacy.

Taken together, these direct measures provide strong evidence that Kuhlthau's Information Search Process offers an effective conceptual framework for organizing one-shot session content. Furthermore, once adapted to the time, technological, and course-related constraints of particular one-shot instruction sessions, this model provides a common framework under which to assess otherwise distinct instructional contexts and settings.

In addition to these direct measures, the library staff has sought to indirectly measure the impact of library instruction on students' affective, or

Table 3: *2009/10 Programmatic Assessment: Total Number of Correct Answers Compared to Fall 2008 Pre-Tests and Percent Change*

# of Correct Answers Per Test	Pre-Test % of Total (n=117)	Programmatic Assessment % of Total (n=34)	Percent Change
0	2%	0%	**(100%)**
1	15%	0%	**(100%)**
2	29%	6%	**(77%)**
3	28%	9%	**(68%)**
4	15%	30%	**100%**
5	9%	35%	**289%**
6	1%	15%	**1400%**
7	0%	6%	**∞**
8	1%	0%	**(100%)**

emotional, responses to research tasks. During the 2009/10 academic year, library staff administered end-of-semester student satisfaction surveys to a random sample of students. Surveys asked students to indicate whether they had attended at least one library instruction session during the semester and, if so, evaluate its impact on their research and writing. For the fall 2009 semester, of 149 students (21% of total FTE) responding to the survey, 92% indicated that they felt more confident about their research after instruction. For the spring 2010 semester, of 189 students (26% of total FTE) responding, 95% indicated greater confidence. These indirect results are further supported by responses to the library's array of faculty satisfaction surveys. While direct measurement is in order here, these indirect measures suggest a positive correlation between the library's one-shot instructional model and reduced research anxiety.

Conclusion

Kuhlthau's Information Search Process has proven to be a dynamic and flexible conceptual framework for organizing one-shot session content at Bennett College for Women. As part of Holgate Library's two-pronged effort to address student motivation and engage students in reflection about the research process, this model and corresponding instructional outline have proven invaluable for increasing the effectiveness of the library's one-shot instruction sessions. Additionally, as anticipated by Kracker, reinforcement of this model over multiple instructional experiences appears to increase students' "knowledge of the [Information Search Process] for improving research, cognitive, and information literacy skills" (Kracker, 2002, 291).

Finally, Kuhlthau's Information Search Process provides a robust framework for increasing consistency across sessions and permits easier

comparison of session outcomes for assessment. Because this model is generic and extensible to a variety of instructional contexts and settings, it gives library staff the ability to adapt instructional modules as the library's array of resources and services evolves. In short, while no substitute for focused faculty-librarian collaboration and multi-session course-integrated instruction, this approach to one-shot library instruction is something with which the library—and its students—can grow.

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I. Pre-Test

Before we get started, please answer the following questions. Circle the best answer for each question. These questions will not be graded, so don't put your name on this sheet. The librarian will collect your answers in about three minutes.

1. If you are looking for information about the Roman Empire, which would be the best place to begin your research?

>   a) the Internet
>   b) a newspaper article
>   c) a periodical article
>   d) an encyclopedia
>   e) I don't know

2. The library catalog is a list of

>   a) books held in the library
>   b) periodicals held in the library
>   c) videos held in the library
>   d) all of the above
>   e) I don't know

3. Why are articles from scholarly, peer-reviewed journals better to use in a research assignment than articles from popular magazines?

>   a) they are more current
>   b) they are longer
>   c) they are written by specialists
>   d) they aren't biased
>   e) I don't know

4. If you want to find magazine articles on a popular topic, you should
>   a) search the library catalog for your topic
>   b) search a periodical database (like Academic Search Premier) for your topic
>   c) leaf through the library's magazines until you find your topic
>   d) all of the above
>   e) I don't know

5. If you were searching a database for information about the effects of crime on the elderly, what should you type into the database's search box?

>   a) effects crime elderly
>   b) the effects of crime on the elderly
>   c) elderly
>   d) crime
>   e) I don't know

6. If you were searching a database for information about the effects of crime on the elderly, which of the following searches is likely to give you the most results?

> a) crime and elderly
> b) crime or elderly
> c) I don't know

7. Which criterion is least important for deciding if a website is appropriate for your assignment?

> a) the information on the website has an identifiable and trustworthy author
> b) the information on the website has been recently updated and includes a date
> c) the website includes numerous pictures and diagrams
> d) the website is published or sponsored by a trustworthy organization
> e) I don't know

8. Of the following examples, when do you not need to provide a citation in your assignment?

> a) when you directly quote another author's work
> b) when you paraphrase another author's work
> c) when you recount your own, lived experiences
> d) when you paraphrase from an unsigned website
> e) b and c
> f) I don't know

II. *Post-Test*

Now that we have spent some time getting familiar with the library's resources, please answer the following questions. Circle the best answer for each question. These questions will not be graded, so don't put your name on this sheet. The librarian will collect your answers in about three minutes.

1. If you are looking for information about the Civil War, which would be the best place to begin your research?

> a) a book
> b) a popular magazine
> c) a peer-reviewed journal
> d) an encyclopedia
> e) I don't know

2. In the library catalog, you may find materials at which of the following colleges:

> a) Bennett College
> b) Guilford College
> c) Greensboro College
> d) Salem College and Academy
> e) all of the above
> f) I don't know

3. What is the most important difference between articles you find in popular magazines and articles you find in scholarly, peer-reviewed journals?

        a) articles in scholarly journals have been reviewed by specialists
        b) articles in scholarly journals have pictures and diagrams
        c) articles in scholarly journals are unbiased
        d) a and b
        e) I don't know

4. If you want to find magazine articles on a popular topic, you should
        a) search a periodical database (like Academic Search Premier) for your topic
        b) search the library catalog for your topic
        c) leaf through the library's magazines until you find your topic
        d) all of the above
        e) I don't know

5. If you were searching a database for information about differences in academic achievement between middle-school boys and girls, what should you type into the database's search box?

        a) boys girls achievement "middle school"
        b) boys girls middle school
        c) boys and girls
        d) middle school
        e) I don't know

6. If you were searching a database for information about violence against women, which keyword search would give you fewer results?

        a) violence and women
        b) violence or women
        c) I don't know

7. Which is not a criterion for evaluating the quality of a website for research?

        a) Authority
        b) Accuracy
        c) Popularity
        d) Objectivity
        e) I don't know

8. Documenting a source is important when you are

        a) using a direct quotation from it
        b) using facts or statistics from it
        c) paraphrasing it
        d) all of the above
        e) I don't know