MY SEARCH FOR A MEANINGFUL INFORMATION LITERACY COURSE:

A DRAMA IN THREE ACTS

A Synthesis Project Presented

by

JAN REPPERT COE

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ABSTRACT

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June 2007

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My synthesis project began as a personal and professional mission to help students decipher their library assignments and learn how to do research in general. In pursuing this goal, I learned a lot about 'information literacy' but I also learned about the reasons *being* information literate is important to me: it is a gestalt of a critical thinker. I discovered that beyond becoming adept in the mechanics of information retrieval, what I really wanted for my students are the very things I value and enjoy doing myself: learning about communities of discourse; mulling over and asking questions about existing knowledge; relinquishing preconceived notions about a subject; and discovering new perspectives and interests. In the end, my project turned out to be not so much a search for an information literacy course as it is an exposition of one librarian's open-ended evolution into a critical thinker and reflective practitioner.

At the start of my year-long sabbatical leave in the Critical & Creative Thinking Graduate Program at the University of Massachusetts Boston, I characterized my quest as an inquiry into the most meaningful way that students could be taught information literacy skills. This synthesis project recounts how I first deepened my interest in the nexus between

information literacy, critical thinking, and problem-based learning through an extensive literature review. Following this, the project takes a narrative turn where my experiences in the CCT Program are described and celebrated. I show that my participation in the CCT Program was the catalyst for the changes that began to occur in my thinking about information literacy. As my original quest took on these new dimensions, I also became intellectually engaged in areas outside of information literacy. Several courses I took in the Program elicited strong interests in bioethical issues and in the capacity of citizens to have input into debates around science and technology.

Finally, I describe my teaching experiences upon returning to work, in which I came to the eventual recognition that there is no 'silver bullet' information literacy course. Being able to set aside this idea paradoxically opened a new avenue toward achieving my mission as I was invited to form a Learning Community with a geographic information systems (GIS) course. It appears that, from this point forward, I am open and prepared to continue developing as a 'work-in-process'.

DEDICATION

In the order in which I met you:

To Nina Greenwald: You are an inspiration to me! Your zest, commitment, and humor are a huge part of the CCT Program. I admire your intellectual rigor, your devotion to students, and your passion for teaching. I was incredibly lucky to be able to experience your optimism in class and as your G.A.

To Arthur Millman: It was a joy to be a part of your Philosophy class. I admire your wide-ranging knowledge and your erudite approach to philosophical theories and issues. I could have listened to you all day long. Thank you for sparking my interest in bioethics.

To Peter Taylor: You took a lot of chances on me. Your generosity in referring me to scholars and writers enlarged and enriched whatever I was working on at the time. Becoming your R.A. introduced me to many of the interests I have today. I admire you for your absolute dedication to the growth and intellectual development of students in the CCT Program and for your own formidable body of work. Thank you!

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CHAPTER 1

PROLOGUE

Narrator: *You've been in the CCT Program for nearly three years now – what do you have to show for it?*
Author: *Plenty! Like all good dramas, though, it has to unfold in a certain chronology and structure…But it would be a mistake for you to assume that the beginning, middle, and end of my story constitute a finished production…*
Narrator: *And that means what, exactly?*
Author: *Let's set some definitions and ground rules here. When I say "story" or "drama" I really mean process. And, Narrator? From here on in everything that follows is in MY voice.*
[Narrator vanishes]

I am a librarian in a relatively small community college situated between the Rose Hills Cemetery and the 605 freeway in Whittier, California. Our position makes it unlikely that people will "drop by" the college. All the students at Rio Hondo have to want to be here and to make an effort to get here. Let me give you a small sketch of our student population. We're 68% Hispanic, 12% Asian, 10% White Non-Hispanic, 2% Black, and 8% other or undeclared ethnicities. 63% of our students are U.S. native-born, 13% are naturalized citizens, and 23% are not citizens. In our district, more than 41% of area residents have not completed high school, compared to 23% statewide. For over 23% of area residents, a high school diploma or GED is the highest level of education completed. The proportion of district residents who have completed a Bachelor's degree is half that of residents in Los Angeles County and across the state.

The typical General Education course at Rio Hondo may be composed of recent high-school graduates, immigrants new to the country and the English language, mature adults who have been unemployed or in low wage jobs who want to increase their skills, parents on welfare-to-work programs, transfer students who want to complete some of their requirements at a lower

cost, and vocational students who want to begin a career or keep up to date with their present career. When we meet these students at the Reference Desk, in library orientations or workshops, we face individuals that range from knowledgeable adults who may not have stepped into a library in years to recent high-school graduates who are technologically savvy but information illiterate.

And we librarians are not alone. Discipline instructors in the nation's community colleges are well acquainted with the uneven academic preparation that many students bring to college. A college nursing instructor put it this way:

> They get into my class, I give them a paper to do, and they don't have a clue how to write a paper, how to defend what they've written, supportive arguments, and I find it very frustrating. …They can't critically think, they can't do the problems, they can't figure out what they need out of the question (Perrin & Charron, 2003).

Russell E. Hamm, a consultant on workforce development issues and former senior community college administrator and official with the U.S. Department of Labor's Employment and Training Administration notes that, "beyond the pressures of full lives, many community college students carry added burdens onto campus. Some of the 40 million Americans reportedly functioning at the lowest literacy levels become community college students, presenting a challenge to the typical community college" (2004, p.31). This mix of students with their various histories, abilities, and aptitudes is what makes the community college environment so challenging and rewarding, as well as so confounding when it comes to expectations of - and familiarity with - research skills.

Every day as an online instructor I connect with students in ways that are aimed at helping them master basic information literacy skills. In my online course and at the Reference Desk I have many opportunities to observe the way that students respond to the challenges posed by research assignments. In my experience, before the formal research process can even begin a

critical reading and understanding of the assignment is necessary. Understanding the assignment, however, can depend on many things: the clarity with which it is written; the student's perception of how the assignment relates to what has been discussed in class or the textbook readings. It is not uncommon for students from the same class to describe what they think they need in radically different ways. Once these hurdles are crossed and the actual search for information starts the student needs to think critically in order to decide where to begin searching: to be able to devise search strategies appropriate for the topic; to read, understand, evaluate and synthesize the content of the information source. "A connection must be made between information, facts, figures,… and the way they contribute to ideas or concepts." (McCormick, 1985).

On a practical level, it is my belief that the current library instructional format, the 50-minute "one-shot" orientation, is not adequate to the task of teaching information literacy. We need to stop pretending that the one-shot accomplishes any of the serious challenges that student researchers face. The California State Universities system (CSU) recognized this fact when it convened an Information Competence Task Force in 2000:

> It is not uncommon for students to be satisfied with whatever information they find first, and "to go with what they know", preferring to use search engines and websites over library portals, online catalogs, or subscription databases. Evidence indicates that students have difficulty formulating a research question, do not make effective and efficient use of their time, are not aware of the wide variety of information choices and formats available to them, and do not systematically and critically evaluate the sources they do find. Students tend to use web-based electronic information sources found through search engines over other formats, placing more value on current electronic information sources than on more in-depth discussions often found in books or journal articles. In addition, it is not uncommon for students to guess when looking for information, rather than to demonstrate the ability to effectively use search techniques that directly fulfill an information need (Rockman, 2002).

On a personal level, I want to change the way I approach teaching information literacy. I want students to understand that the research process is <u>not</u> linear – there are many dead ends,

shortcuts, and wrong turnings. I would like students to understand and appreciate what librarians have known all along: that research is exciting; and that research matters. They need to know that when conducting research, they have a responsibility to examine their own assumptions and opinions as well as those propounded in published sources, by their friends, and in the media. The overarching issue that I want to take up in this paper – the issue that had driven me for more than the past three years is: **how can the library, and librarians, best help students to acquire the kinds of information skills and knowledge (aka information literacy) that will help them succeed in college and in life?** Granted, the sweep of that question is somewhat grandiose, but in it are assumptions that will be revealed and critiqued in due course.

I begin in Act I by examining the large and various literatures that underpin this multifaceted topic: information literacy, critical thinking, and problem-based learning. Information literacy itself is divided for the purposes of this paper into several sub-categories: background & overviews; collaboration; disciplinary approaches to IL; and learning styles and pedagogical approaches.

A huge topic within library and information science scholarship, more than 5000 publications related to library user instruction and information literacy have been published and reviewed in the past thirty years (Rader, 2002). Articles range from how to use questions effectively in the research process (Bodi, 2002); to the merits of online versus traditional classroom instruction (Byerley, 2005); to the necessity for using a discipline-based approach to information literacy (Grafstein, 2002); to critiques on the very notion of "information literacy" (Pawley, 2003). In a field where everyone is a practitioner and thus a kind of expert (at least in his or her own library and practice) few "gurus" have emerged.

Much more prominent and far-reaching in scope has been the establishment of the *Information Literacy Competency Standards for Higher Education* by the Association of College and Research Libraries (ACRL) in 2000, which have now become the benchmark for skills deemed required for lifelong learning. Briefly, the Standards have established that the information literate individual is able to:

- Determine the extent of information needed
- Access the needed information effectively and efficiently
- Evaluate information and its sources critically and incorporate selected information into one's knowledge base
- Use information effectively to accomplish a specific purpose
- Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally

Contrarian voices are appearing, however, that take issue with the rather prescriptive and mechanistic character of the Standards and their assessment, which I take up later in the paper.

The literature on critical thinking forms the second strand in the literature review. With a history that is as long as, or longer than, information literacy, the critical thinking movement has generated many perspectives and definitions (Pettress, 2004). My intention here, however, is not to isolate a particular definition or subset of skills, but rather to draw attention to the similarities between the effort to infuse critical thinking skills into the curriculum and the effort by librarians to infuse "information literacy" into the curriculum. I will argue that teaching a student to think critically IS teaching them to be information literate, and much more.

Problem-based learning (PBL) forms the third strand of the literature review. There is now a considerable body of literature on PBL, especially in medical education contexts. The approach was pioneered at the McMaster University Medical School in Ontario, Canada in 1969, but enthusiasm for the benefits of using PBL has spread to additional settings that include gifted

education, educational administration, business, educational psychology, engineering, chemistry, various undergraduate disciplines, and K-12 education (Hmelo-Silver, 2004).

Informed by the scholarship from information literacy, critical thinking, and problem-based learning, the paper will transition to a descriptive narrative of my own experience in meeting and finding ways around obstacles to creating a meaningful information literacy course.

Act II serves as a kind of festschrift and short memoir of my experiences in the CCT Program. Hopefully it will demonstrate the foundational way that knowledge gained from CCT has been enacted in my life and practice.

Act III recounts my initial efforts to create and implement information literacy sessions that utilized a problem-based learning approach. In addition, it relates the challenges I faced in recruiting students to my information literacy sessions; the opportunity that opened up to write curriculum for a research skills course and teach it online; my stumbling upon "critical information literacy theory" and what this might mean for my development as an instructor and librarian.

The Epilogue will tie all these various stands and experiences together into what has turned out to be a work-in-process and make some predictions about what lies ahead. My choice of the three act drama motif is intentional; it provides a natural framework for relating why I sought out and joined the Critical & Creative Thinking Graduate Program at the University of Massachusetts Boston, first in the Graduate Certificate program and then in the Master of Arts program. From getting my toes wet with my first CCT course in the summer of 2003, to returning to Boston the following year for my sabbatical leave and beyond, this program, its students and its faculty have been the directors of my intellectual re-awakening and professional reinvigoration. Along with the accompanying Process Review Portfolio, the synthesis paper is

my final performance piece. It is my hope that in showing my transition from rather diffident college librarian to critical and creative thinker and reflective practitioner, my story will soon take its place in the panoply of CCT success stories of growth and development.

ACT I

I SURVEY THE RELEVANT LITERATURE

This chapter will examine the research that librarians and others have conducted that is relevant to my project. My three year inquiry into the triad of information literacy, critical thinking, and problem-based learning has enabled me to observe changes in the literature of each of these component areas. There has been a steady increase in the number of articles devoted to information literacy (IL), while the number of articles on critical thinking seems to have stalled. Problem-based learning articles have gradually increased, especially in non-medical contexts. Each of these literatures will be discussed in turn, beginning with a longer and more varied section on information literacy and its relationship to collaboration, discipline-based approaches, and learning styles and pedagogies.

Information Literacy – Backgrounders and overviews

Clustered under this heading are articles that presage the debates within academic librarianship with regard to information literacy. For the benefit of non-librarian readers, Lori Arp's 1990 article titled, "Information literacy or bibliographic instruction: semantics or philosophy" provides an introduction into the struggles that plague the profession over how to characterize to others what it is we actually do. Arp, Library Department Head at Northwestern University, made the point that the transition from 'bibliographic instruction' (BI) to 'information literacy' (IL) aligned our activities with literacy movements in general and gave IL a social and political context with which it had not previously been associated. Arp maintained that this gave IL a "deficit" flavor, implying that there is a norm or standard that must be

achieved and she further predicted that a political agenda would emerge to define and measure specific skills within a hierarchical ordering. Arp cautioned that, "With information literacy we must recognize that we have an expected product—the information-literature individual—and that we will be expected to produce this product" (p.?).

Another article published in this time period provided a tour de force on the nature and provenance of information literacy. Lawrence J. McCrank, professor of Library and Information Science and Dean of Library and Information Services at Chicago State University, asked rhetorically "What's in a name? Everything!" Information literacy is difficult to define, he said, but easier to describe as an abstraction or ideal. Moreover, it is so relative to an individual and a particular need and the situation that it seems to defy measurement (1992, para 2). McCrank charted an erudite and dizzying course through the historical evolution of the term; prodded and provoked the profession ("…If information literacy is meant to be ecumenical, embracing all forms of information, then librarians must also recognize that libraries have never had a monopoly on information as institutions or by virtue of their holdings" (para 11); opined on the ironic situation librarians found themselves in ("…in a service-oriented profession like librarianship, the professional ethic of sharing not only information found but the skill to find it, is antiprofessional in that the democratization of the expertise dissolves that expertise and reduces the value of the once-expert professional" (para 18); and discussed information literacy programs with verve and style before concluding that:

> Library-hosted information literacy programs must aim at sets of skills and knowledge about information handling, types of tools, systems use, and access and retrieval that provide information seekers with the means to act freely, on their own accord, to satisfy their own needs, from whatever sources, through all available means, regardless of medium, format, and presentation. More than the ability to read and write, this entails findings something worth reading and writing about; it must include critical skills in discernment, judgment, and even taste, before one is ready to engage in research, analysis, and the generation of new knowledge. It is difficult to imagine information

> literacy instruction without libraries or librarians, or classroom teachers attempting such education without recourse to both. (para 30).

Other articles that provide background to these issues include an oft-cited offering from Edward K. Owusu-Ansah who proposed a comprehensive approach to information literacy instruction (2004). Mr. Owusu-Ansah, Coordinator of Information Literacy and Library Instruction at the College of Staten Island, CUNY, reviewed several instructional formats including the 50 minute "one-shot" as well as drop-in workshops, course-related and course-integrated instruction, but concluded that a mandated information literacy course would be the best course.

Diane Zabel, the Louis and Virginia Benzak Business Librarian at Pennsylvania State University, took issue with the mandated course idea commenting that such a requirement would not be nearly as unproblematic as Owusu-Ansah would like to believe (2004, p 17). She questioned the impact an additional requirement would have on tuition-paying students; the likelihood of such a change passing though an institution's curriculum change procedures; and where to find the money and staffing requirements for the proposed course. Rather than to put all IL's eggs in one basket, Zabel preferred a mix of instructional formats but especially ones that partnered with discipline faculty because, "[i]nformation literacy cannot survive in a vacuum" (p. 19). In fact, the literature on collaboration has grown in the past few years and is so relevant to my project that I discuss it below in its own sub-category.

Hannelore B. Rader's "Information Literacy 1973-2002: A selected literature review" charts a large increase in articles devoted to information literacy. In the thirty year period that the review encompasses, more than 5000 articles related to library user instruction and information literacy were published. She noted that information literacy was now a global concept with publications appearing in journals from the United Kingdom, Australia, New Zealand, and also

in China, Germany, Mexico, Scandinavia, Singapore, South Africa, South America, Spain, and others (2002, p.242).

As a follow-up to her 2000 and 2003 literature reviews, University at Louisville Libraries' Anna Marie Johnson compiled a select bibliography on library instruction and information literacy in which she reported that distance education and online learning topics formed 15% of the articles in 2004. Assessment of library instruction comprised another 10% of the articles with the remainder being divided among those that deal with contributions to IL from cognitive psychology and education (brain research and constructivism respectively) and a renewed interest in problem-based learning (2004, p.487). These articles and others (Ellis and Salisbury, 2004; Macpherson, 2004) form the base stratum of the scholarship on information literacy; the following sub-sections will flesh out other topics within information literacy that are of importance to librarians in general and my synthesis project in particular.

Information Literacy and Collaboration

The 'collaboration with faculty' topic in the literature has grown steadily as librarians have tried to operationalize their positions on information literacy. Faced with dwindling opportunities to teach "in the moment" at the reference desk, librarians are partnering with individual instructors in a variety of ways: additional workshops/advanced orientations on specific topics; hands-on exercises; paired classes; and participation in learning communities. Stevens (2007, in press) remarks that, "…in this first decade of the twenty-first century, the notion that effective IL programs involve both collaboration with disciplinary faculty and integration into the academic curriculum has become axiomatic for most academic instruction librarians" (p. 2). Nonetheless, there are obstacles to overcome, including a faculty culture that

may include issues with professional autonomy, academic freedom; lack of time; and resistance to change (Hardesty, 1995 as cited in Stevens, p. 2). On the other side of the coin are librarians' own entrenched positions and negative attitudes about what they perceive as faculty indifference to IL. Stevens offers a simple and effective solution to raising awareness of IL among faculty: start publishing in disciplinary journals!

> Faculty [members] who read about IL in their disciplinary publications are…more likely to be receptive to the collaborative initiatives advanced by librarians at their home-institutions. Rather than a time-consuming activity that might be viewed as an instructional fad or a peculiar obsession of librarians, IL initiatives might be viewed more positively by faculty [members] who have already read about similar ventures in publications that they deem important (p. 9).

Davis and McGill (2004), librarians at California State University at Fullerton, are among many authors who publish in *Academic Exchange Quarterly*, an independent peer-reviewed journal for educators in all segments of the profession. Their article discussed outreach efforts by librarians and provided ideas for networking, research assignments, and other ways librarians and faculty could partner effectively. Shelley Gullikson (2006) examined faculty perceptions of the *ACRL Information Literacy Competency Standards for Higher Education* and found that although faculty believes most of the outcomes are important, there is little agreement on just when students should acquire them. Moreover, faculty responding to her survey found the wording of the *Standards* outcomes to be vague, repetitive, and quite confusing - giving a hint that one barrier to collaboration should possibly be attributed to the wording and general unwieldiness of this key document in which librarians set such store (p. 591). Ann Grafstein (2002) makes a very strong case for not "decontextualizing" IL and the research process. She distinguishes between information retrieval skills and information literacy:

> The argument being developed here is that there is a risk in carrying too far the dichotomy between information seeking as a process and more concrete subject-based knowledge. The risk is that of isolating entirely information-seeking skills from

> knowledge, thereby losing sight of information-seeking skills as a tool whose ultimate goal is the synthesis of information into knowledge. (p.200)

Her insight that "being information literate crucially involves being literate *about something*" (p. 202, italics in original) is echoed in the upcoming section on critical thinking and it is a position that I completely endorse. Grafstein concludes that IL should be integrated and taught within the curriculum of each course, necessitating collaboration between educators and librarians.

Malefant and Demers (2004) write of their experiences in collaborating for point-of-need library instruction. During Demers' "Issues in Science and Technology" course, librarian Malefant delivered a 90 minute instruction session that – while somewhat limited in time and scope – did set the stage for the graded information literacy assignments which were to follow. Instructor and librarian collaborated on the materials and handouts for the assignments which were administered at different points in the semester. They noted that phased IL activities were particularly relevant and appreciated by upper-division students while speculating that incoming freshmen may not yet be in a position to appreciate library instruction, "to whom it is all an abstraction" (p.272).

Reading the literature on faculty-librarian collaboration has kept before me the realization that I cannot accomplish my goal of developing a more meaningful IL course all on my own. However, given the tendency of practitioners to publish their success stories rather than their problematic stories, it is difficult to learn how to proceed when all the necessary elements are either not present or do not fall into place as easily as described in the library literature. I take up this issue in the next chapter. For now, I continue this survey of IL with the next sub-section highlighting specific disciplines in which successful collaboration has taken place.

Information Literacy and Writing-Across-the-Curriculum

The literature indicates that there is a natural affinity between information literacy and the Writing-Across-the-Curriculum (WAC) movement. Nutefall and Ryder (2005) report on an exemplary model developed by librarians and faculty at George Washington University. There the University Writing Program, "…is based on the assumption that good writing and good research happen when students consider the writing/research process within a particular context, with a particular purpose, and with a particular audience" (p. 309). Course topics can vary widely and are developed in the summer preceding the course by faculty development workshops in which both faculty and librarians participate.

> Facult[ies] focus on the rhetorical, analytical process by which a person identifies the expectations of particular discourse communities [and] teach students how to read critically in order to enter into the conversations of that community. Furthermore, each writing course is linked with a University librarian, who works collaboratively with the writing instructor to integrate information literacy appropriate to each course topic and to help stress the point that expectations and processes of information literacy also are context-based concepts (p.309).

An interesting variation on the theme of collaboration between writing faculty and librarians is reported in a study by Samson and Granath (2004). Using a 'teach-the-teacher' model, the article described a research project based on a comparative analysis of randomly selected sections of English Composition at the University of Montana-Missoula that included library research components integrated into the curriculum (p.149). The control group instructors (Teaching Assistants) were provided with research instruction scripted by librarians at a teaching assistant camp prior to the semester. This instruction was delivered by the instructors to a student group in the library classroom. The other student group received the same instruction in the library classroom but it was delivered by the participating librarians. Among the results obtained, one interesting finding stood out: those sections that received research instruction from their own

classroom instructors scored higher on the tasks and data sets collected than did the group receiving instruction from the participating librarians. The authors address this novel finding with the statement: "This new model of bibliographic instruction for first-year students does not reduce the role of the librarian but challenges the traditional approach of librarians providing direct instruction to this particular group of students" (p.154). The authors further note that this new model, "…fosters the role of the librarian as one of guide and facilitator; it strengthens the opportunities for collaboration with teaching faculty and graduate students; and it fully demonstrates the value of integrating information literacy into the curriculum" (p.154). My experience makes me highly skeptical that such a model would work well in a community college; but, in fairness, the authors do state that, "the dynamics of a particular campus may influence the effectiveness of any particular program" (p.154).

The similarities between WAC and IL are well articulated by James Elmborg, Professor at the School of Library and Information Science at the University of Iowa. His 2003 article is a splendid example of a thoughtful, substantive inquiry into the place of IL in the curriculum without a *soupçon* of the "chip on the shoulder" that characterizes some librarian-authored articles. Involved as Dr. Elmborg is in educating the next generation of librarians, it is fortunate that he advocates a richer vision for information literacy efforts than is currently the case:

> When taught through skills (spelling, grammar, punctuation, outlining, etc.) writing becomes detached from the production of meaning in which students can invest and about which they can care. This detachment breeds cynicism and a view of writing as busy-work. …There is similar danger in current information literacy practice. There is a "grammar" of information, and many librarians devote precious instructional time to reaching subject-searching versus keyword-searching; Boolean connectors; complex nested search statements; or the intricacies of the Library of Congress Classification System. Like sentence-level grammar, these are isolated skills that separate research from the making of meaning. That is not to say that these concepts are not important, but rather that, as ways of encouraging students to see the importance of the library in the development of their ideas, they are not compelling or even interesting. (p. 73).

I close this section with an inspirational pair of articles by Rolf Norgaard, faculty member in the Program for Writing and Rhetoric at the University of Colorado at Boulder. His 2004 articles in *Reference & User Services Quarterly* gave librarians a lot to 'chew on' with regard to how we can learn from other disciplines. The first, more theoretical article explored what "information literacy might look like when shaped by writing, writing theory, and writing practice" (p. 129). The second article dealt with the 'pedagogical enactments' with which 'rhetoricized' information literacy would deal, including the hoary research paper. Norgaard characterizes the typical college-level research paper as a "cut and paste" assemblage of material drawn from just several sources, supplemented…with a padded bibliography. He continues:

> Indeed, the term "research paper" is something of a misnomer, in that genuine research is precisely what is often missing. The sheer bulk of information found and cited becomes confused with the search for genuine and interesting questions and inquiry into reasons for arriving at certain conclusions. A few hours spent roaming the stacks, pulling up on-line articles, or Googling for Web sites may yield a wealth of information, but it also tempts students merely to describe the research of others, while resisting genuine inquiry of their own (p. 222).

These lines cause me to squirm each time I read them because so much of what we do in an information literacy course culminates with just such a recipe for an annotated bibliography. Indeed, in their article "Information Literacy in Introductory Biology", Firooznia and Andreadis (2006) found that students failed to make the connection between the library assignments and the final research paper in their class, complaining that "the library assignments should have focused on the final research paper"! (p. 27). We may have unwittingly trained students to regard research not as a creative investigation or inquiry but only as a utilitarian search for the required items for a research paper or bibliography.

Information Literacy and Learning Styles and Pedagogies

An important facet of curriculum development is to 'know your audience'. This is as true in education as it is in marketing. A number of articles in the literature purport to describe the habits and preferences of Gen X or Gen Y. While it is useful to learn something about these individuals and their information-seeking behaviors, the issue is rather what learning styles do librarians need to be aware of when designing IL sessions or courses. In a 'typical' community college class, it would be a mistake to assume that most students fall into the so-called "Net Generation". The mix of students at my campus is almost one of day and night – literally. When Gen X and Y students leave for the day (usually as early as possible!), different kinds of students enter the classrooms and library. These are primarily mature-age, working people who come on campus after their jobs finish or students with family responsibilities that prevent them from enrolling in day classes. Online students form another category of learner whose learning styles need to be accommodated.

Beginning with the attributes of Gen X/Y researchers, Costello, Lenholt, and Stryker's short literature review distilled commonly cited characteristics that included: a preference for short, focused segments rather than lectures; resources that were engaging and preferably Web-based; personal contact and feedback from instructors (2004, p. 452). Cannon echoed a perception that is not unusual among librarians when he stated that:

> …students are not interested in learning different approaches to finding needed information, preferring to have concise, ''practical'' information handed to them. Consequently, ''librarians must spend less time in building and controlling collections and more time in distilling information into neat, ready-to use packages'' (Cannon as cited in Costello, 2004, p.452).

Still, coming up with neat, ready-to-use packages is not guaranteed to engage students either – most academic libraries now have versions of the ubiquitous "subject guides" that point students

to suggested books, evaluated web sites, suggested searches to be used in online databases, and other value-added resources on a particular topic or subject. Even when shown these convenient integrated guides, however, students do not use them preferring to stick with what is familiar – searching the Internet with Google or another search engine.

Many students, be they Gen X/Y or Z, demonstrate a basic unfamiliarity with the research process. Sonia Bodi, Visiting Instructor at the Graduate School of Library and Information Science at Dominican University, has written often and eloquently on the topic (Bodi, 2002, 1998, 1995, 1988). "The primary difference between the research process of scholars and of undergraduate students is that scholars begin with an extensive body of knowledge of their discipline, whereas students often have little context for their topic. Scholars also know the theories and paradigms of their discipline and the methodologies that shape and answer research questions" (2002, pp.110). She continues:

> [I]t appears that students search in a haphazard, unplanned way, happy to find whatever. In a sense, they are trying to engage in the kind of serendipitous discovery that scholars do, only without having first established the context in which that sort of discovery is likely to happen. In their minds there may be logic to their searching, but the logic is to get a certain quantity of materials because it is shaped by an urgent deadline--hence, the gap between the way librarians teach them to do research and the way they actually do it. This is not to argue that undergraduates should do research as scholars do, but merely to identify the differences.

Leading finally, to another germane point: many students have a coping strategy, not an information-seeking strategy (Leckie, as cited in Bodi, 2002). Studies that investigate students' understanding of the 'research process' are of great interest to me.

Phillip M. Davis, Life Science Bibliographer at Cornell University, reported on another aspect of student research behavior that is relevant to the discussion, that of the choice of sources for research papers. His longitudinal study tracked undergraduate citations in a microeconomics class from 1996 to 2001. Among his findings were that citations to books in student

bibliographies dropped significantly from 30 percent to 16 percent of the sources cited while documents in the Web category showed a large jump from 1996-1999. By contrast, in 2001, when faculty began to issue "written and enforceable guidelines for acceptable reference sources", book citations rose again, journal citations increased dramatically, and Web citations decreased along with newspaper citations (2003, p. 47). As Davis mentions dryly, access to information is not a limiting factor to student research – time is. Students, many of whom are working on their term papers the night before they are due, may be selecting Internet resources because they perceive them to be more convenient than traditional library research (p.49).

The preceding discussion might be said to be more indicative of learning heuristics than learning styles, so it is to the question of styles that I now turn. Constructivist and "active learning" approaches are popular in information literacy sessions and courses. Cooperstein and Kocevar-Weidinger are instruction librarians who successfully integrated constructivist elements into their 50-minute one-shot library sessions. Crucially, they argue that constructivist learning is inductive – the concept follows the action rather than precedes it; the activity leads to the concepts, the concepts do not lead to the activity (2004, p. 141). This is actually quite a revolutionary reversal of the order in which learning activities typically take place in IL instruction. Examples of the exercises that they created are *Scholarly journals versus magazines*, *The Internet versus commercial databases*, *Subject versus keyword*, *Zero results*, and *Nesting*. All these topics are mainstays in IL, but designing the exercises so that the student "constructs the meaning" of the task in social interaction with others could go a long way toward addressing the needs of visual, auditory, and kinesthetic learners. The sticking point with a completely constructivist design (as we will also see with problem-based learning designs) is that when a librarian only has 50 minutes with the students, the pressure is on to present the material or

concept and then follow with a hands-on activity, rather than to "let them wander". Cooperstein and Kocevar-Weidinger acknowledge this objection, however, and agree that "[f]inding the perfect examples and problems that will lead students to an appropriate "Aha!" experience is difficult and requires a great deal of intense, time-consuming work" (p.145). Nevertheless, they stand by their modified constructivist approach and I think it is certainly one worth exploring further.

The last article in this sub-section reports on a study that used scaffolding and reflection in an undergraduate education class. Karen Bordonaro is an academic reference librarian and Gillian Richardson is an assistant professor of education and former school librarian at Canisius College. Together they collaborated in a full-length semester long course that embodied an active learning paradigm whose purpose was to "explore practical methods of literacy instruction by examining research-based approaches for improving the reading and writing abilities of elementary students" (2004, p. 392). Specifically, the students were introduced to, and participated in, a number of activities that built upon each other: a presurvey, jigsaw activity, "classwrite" activity, a research plan for a "hot topics" paper, and an annotated bibliography. Quantitative measures included the pre- and post-instruction surveys; qualitative measures included document analysis of written prompts from the survey, comments from research journals, and annotated bibliographies. The formal library instruction session used a jigsaw activity, which involved "dividing students into two different group configurations in order to first learn, then teach each other about various library resources" (p. 393). Major findings as related by the authors are: 1) scaffolding **supports** the **research** process; and 2) reflection **shapes** the **learning** process (p.397, my emphasis). Studies such as this one are extremely valuable for librarians who wish to try something different. It should be noted that this was

"course-integrated" IL instruction and the fact that the IL activities were aimed at a homogenous group (teachers-in-training) also had a bearing on its success.

The preceding sections demonstrate that information literacy has a long pedigree, something of a contentious history, and has re-invented itself several times over the decades. Its current incarnation happens to coincide with the rapid growth in information sources available through the Internet and perception of a "loss of control" over the tools for research available to students in higher education. The growth in library literature related to the pedagogic nature of information literacy is matched by the decline in questions at the reference desk – previously the bread and butter trade of reference librarians. I am not suggesting that the desire to move into the classroom is purely job security related, but it is indicative of librarians' desire to remain relevant and at the forefront of the information landscape. I next turn to another body of literature that informs and influences my synthesis project, critical thinking. My goal is to expose the relationship of critical thinking to information literacy, particularly in how it can impact what I say and do in my IL course.

Information Literacy and Critical Thinking

The debate within the critical thinking community as to whether critical thinking skills are generalist in nature or specific to a discipline or subject area has endured for well over two decades. Tim Moore, Senior Lecturer in the Centre for the Advancement of Learning and Teaching (CALT) at Monash University in Australia recently made a significant contribution to the debate with his paper, "The critical thinking debate: how general are general thinking skills?" (2004). First, he outlined the two positions of the leading opponents: Robert Ennis, Emeritus Professor of Educational Policy Studies at the University of Illinois at Urbana-Champaign and

John E. McPeck, Professor of Education at the University of Western Ontario. Ennis, aligned with the Informal Logic Movement (to be discussed below), regards critical thinking skills as cognitively based abilities that can be brought to bear on any situation since they employ mainly logic-derived skills such as deduction, induction, and identification of assumptions (p.5). McPeck, on the other hand, "offers a counter-definition of critical thinking, namely the 'appropriate use of reflective skepticism within the problem area under consideration'" (McPeck cited in Moore, p. 5). Moore put the generalist and the specifist approaches to the test by using them to conduct a linguistic analysis of three sample texts with reference to three dimensions: the object of evaluation, the content of evaluation, and the register of evaluation. What he found was that, contrary to its stated definition, the Ennis approach was "not a general discourse at all, but rather a quite *specific* one" that included features such as: specific knowledge-forms (argument conceived as a restricted number of statements, and appraised in terms of their logico-semantic relations; a reliance on positivist (non-gradable) criteria of evaluation like *truthfulness* and *logicality*; and a lack of a social-orientation in the framing of the critique (p. 13). There are many more insights from Moore's article than can be described here, but the point is that, as an instruction librarian, I find the McPeck/discipline-specific approach resonates more with my own philosophy than does the Ennis/generic information skills approach. The effort to 'infuse' critical thinking skills into the curriculum and the effort by librarians to integrate information literacy into the curriculum are complementary initiatives. I concur that teaching a student to think critically IS teaching them to be information competent, as I describe below.

When I first began to think and investigate the relationship between critical thinking and information literacy, the preferred notion was "infusion". Infusion, or *integration* as it is now termed, is the preferred strategy because both skill sets (critical thinking and information

literacy) are not "content areas" in their own right, in the sense that there is a discrete body of knowledge to be transferred and assessed, like biology or English literature. Rather, thinking critically and being information literate are aligned more with the disposition to be critical and reflective *about* the content areas. They both embody some, if not all, of the "habits of mind" that are outlined in Arthur L. Costa's Developing Minds: a resource book for teaching thinking skills, and "…mean a disposition toward behaving intelligently when confronted with problems" (2001, p.80). Costa, Emeritus Professor in Education, California State University, Sacramento, is now associated with the Center for Cognitive Coaching and has written extensively on teaching thinking skills.

John E. McPeck, gives a level-headed, jargon-free discussion that can inform this idea of folding information literacy within critical thinking in "Critical Thinking and the Trivial Pursuit theory of knowledge" (1994). First, he makes the point that critical thinking is always critical thinking about something. Second, he argues that critical thinkers in his sense, "… [have] both the disposition (and propensity) and the relevant knowledge and skills to engage in an activity with reflective skepticism" (p. 103). This kind of critical thinking has much more in common with what the Center for Critical Thinking's Director, Richard Paul (1994), terms "strong sense" critical thinking and the dispositional perspective on thinking propounded by Harvard's Project Zero's Shari Tishman (2001) than it does with what McPeck calls the "Informal Logic Movement" represented by Robert Ennis.

Proponents of the Informal Logic Movement view would fall into Paul's "weak sense" category in that their emphasis in teaching critical thinking is more concerned with "…a battery of technical skills that can be mastered more or less one-by-one…" or, in McPeck's parlance, a "small bag of tricks, (e.g. the fallacies.)" Implicit in both Paul and McPeck's analysis is that

critical thinking is more than just the ability to recognize inductive from deductive arguments, to correctly parse logical premises and conclusions, and to identify fallacies. Similarly, individual librarians or teaching faculty make the same mistake by thinking of information literacy as purely a narrow range of skills that can be taught with no relation to subject matter.

What, then, is it about teaching critical thinking to students that also teaches them to be information literate? Various researchers have come up with a number of insights. Barry K. Beyer, Professor Emeritus in the Graduate School of Education at George Mason University, talks about problem solving in the same way that librarians talk about preparing for a research paper: 1) define the problem; 2) devise a solution strategy; 3) carry out the strategy; 4) evaluate the strategy (2001, p. 318). Translated into 'librarianspeak', that might mean: 1) Choose a topic in bioethics, for example; 2) Ask yourself questions about your topic to arrive at an angle or perspective that is manageable and interesting to you, for example: what are the main issues surrounding stem cell research? What ethical problems have been identified about this and by whom? Who stands to lose and who to gain by adopting or not adopting stem cell research? 3) Decide how to structure your research effectively – i.e. start with a subject encyclopedia, look for books, articles, and information from qualitative web sites on the subject. 4) Evaluate not just the information that you have found, but your own motives in choosing one side over the other. What does your choice say about your own assumptions and biases?

Senior Professor of Education at the Harvard Graduate School of Education David Perkins reflects upon the social side of thinking. He notes that with the exception of test-taking and other specialized activities, much of the thinking done in schools is social in character. Groups may form to "pool abilities as they think together" (2001, p. 159). Also useful is the idea of enculturation. "Culture teaches, not in the direct manner of a text or a lecture, but by

surrounding learners with particular sets of values and styles of action" (p. 161). This concept has many implications for the way in which information literacy should be taught. A faculty member (including the librarian if she/he is the one doing the teaching) who models a disposition to critically evaluate what she reads in print or on the Internet, hears or sees on TV; or who formulates questions about the subject matter that challenge students' intellect and imagination is demonstrating that there is always a critical component to any quest for information (Costa, 2001, p. 360). "Thinking skills" and "information literacy skills" by do not exist in a vacuum, as observed by Diane Zabel above.

Finally, Barry K. Beyer presents three reasons why researchers recommend that thinking skills be taught in academic subject-matter courses: 1) thinking skills serve as tools for achieving subject-matter goals, just as subject matter serves as a vehicle and context for applying thinking skills; 2) students value learning new skills when they perceive a need to use them to accomplish a subject-matter objective. In other words, teaching information literacy in context or at point of need has a greater chance of succeeding than an isolated library orientation or workshop that is generic and from which students can discern no applicability to their studies; 3) integrating the two kinds of instruction (thinking skills and subject-matter learning) is reciprocal – they each strengthen the other (2001, p. 279).

The Association of College & Research Libraries (2000) defines the information literate person as one who can determine the extent of information needed; can access needed information effectively and efficiently; can evaluate information and its sources critically; can incorporate selected information into his/her knowledge base; is able to use information effectively to accomplish a specific purpose; understands the economic, legal, and social issues surrounding the use of information; and accesses and uses information ethically and legally.

From my engagement with the literature on critical thinking I would add, and *maintains a disposition of critical engagement and metacognition throughout their academic and personal lives*. It remains now to identify what the most effective learning approaches might be that enable students to develop critical thinking skills within the context of library research. For that I turn to problem-based learning.

Information Literacy and Problem-Based Learning

There is now a considerable body of literature on problem-based learning, especially in medical education contexts. The approach was pioneered at the McMaster University Medical School in Ontario, Canada in 1969, but enthusiasm for the benefits of using PBL has spread to additional settings that include gifted education, educational administration, business, educational psychology, engineering, chemistry, various undergraduate disciplines, and K-12 education (Hmelo-Silver, 2004).

PBL is characterized most simply as an educational approach in which complex problems serve as the context and stimulus for learning. It is one of a family of approaches that emphasize learning, such as project-based learning, inquiry-based learning, case-based learning, action learning, and others (Major, 2001). In an oft-cited seminal article, Albanese and Mitchell found that: 1) faculty enjoy teaching using PBL; 2) students in medical education seem to enjoy and perform as well, and sometimes better, on clinical examinations and faculty evaluations; 3) PBL students in a few instances scored lower on basic sciences examinations and viewed themselves as less well prepared in the basic sciences than were their conventionally trained counterparts (1993). Another review of the literature at around the same time found more positive results,

however, generally support[ing] the superiority of the PBL approach over more traditional methods (Vernon and Blake 1993).

More recently, Weiss (2003) discussed research on learning and cognition that can assist professors in designing PBL problems that promote higher-order thinking in students. Wong, Bailey, and Jonassen (2003) considered the tensions that are inherent in the problem-based learning approach; specifically, depth versus breadth, higher-order thinking versus factual knowledge acquisition, and long-term effects versus immediate learning outcomes. The article is a small literature review in itself. Dochy, Segers, Van den Bossche and Gijbels (2003) performed a meta-analysis on the effects of problem-based learning on two categories of outcomes: knowledge and skills. They found that there is a very "robust" positive effect from PBL on the skills of students. A "remarkable" finding relating to retention period was that students in PBL gained slightly less knowledge but remember more of the acquired knowledge.

Recent articles about problem-based learning from non-medical curricula include the potential to create an unforgettable - possibly even life-changing - experience as part of the learning process in an organizational behavior course (Miller 2004); using PBL to improve students' problem-solving skills in an undergraduate business course (Bigelow, 2004); and improved self-efficacy in a capstone computer science course (Dunlap, 2005).

Turning specifically to the research on PBL and information literacy, there are a number of interesting articles, although not great in number. Carder, Willingham and Bibb (2001) suggest that PBL as a student-centered approach can profitably use tightly focused mini-cases to help students develop the critical thinking skills that lead to information literacy. Macklin (2001) introduced PBL as a method for teaching essential information literacy skills in order to develop, promote, and assess critical and analytical thinking. Keyser (2000) distinguishes between active

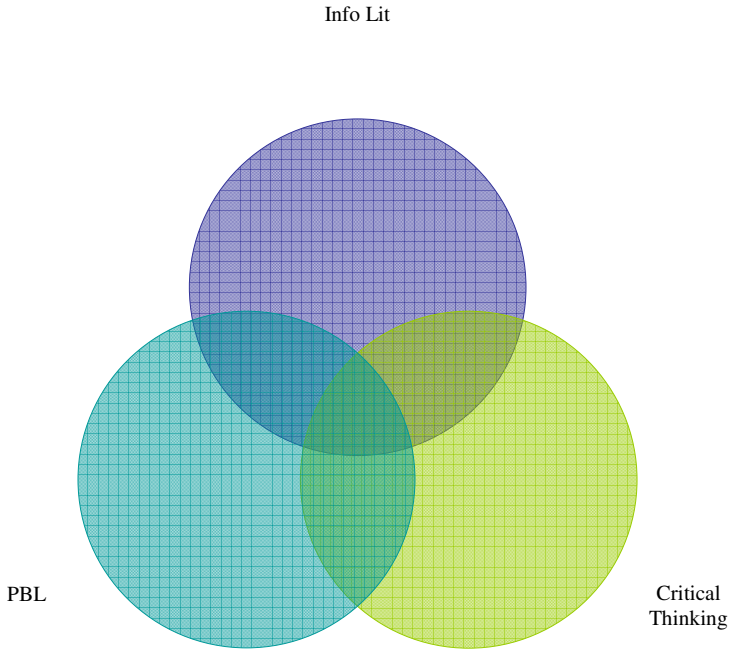
learning and cooperative learning with reference to library instruction and attributes the lack of success of traditional lecture-based instruction to its failure to engage students or to promote higher-level learning.

A number of writers discuss the advantages PBL has in relation to the greater opportunities for collaboration with discipline faculty (Fosmire and Macklin 2002, Kaplan 2002, Enger 2002, Knowlton 2003). Eldredge (2004) looks at the role of the librarian as tutor/facilitator and finds that these skills mesh well with what might be called traditional librarian interventions, such as questioning, guiding, and coaching. Most importantly, the tutor/facilitator is able to model good strategies for learning and thinking, rather than being an expert in the content itself. [Being a good tutor/facilitator] involves knowing when an appropriate question is called for, when the students are going off-track, and [what to do] when the PBL process is stalled (Hmelo-Silver 2004).

Larry Spence, then Director of Learning Initiatives in the School of Information Sciences and Technology, and Social Sciences Librarian Debora Cheney collaborated to develop a model using PBL for their First-Year Seminar at Penn State University. Each contributed articles to a special issue on problem-based learning in a 2004 issue of a core library journal, *portal: Libraries and the Academy*. Spence writes from the perspective of an instructor frustrated with "…a rising electronic tide of mediocrity" (p.487). He enlisted the support of Cheney to help design and implement a PBL course. At first the collaboration was beset by stereotypical attitudes: "As an instructor, I saw librarians as conveniences" (Spence); "Many educators, despite their best intentions, are not teaching students how to think, to ask questions, or how to use strategies to gather information to answer those questions" (Cheney, p. 496). Later on they achieved a better understanding of how challenging it is for faculty and librarians to work

together to integrate new approaches, such as problem-based learning. Both of these perspectives were useful to me in thinking about how to enlist the support of faculty for my information literacy workshops (to be described in the next chapter). Michael Pelikan (2004), Technology Initiatives Librarian at Penn State who also worked with Spence, eventually came to a different stance in terms of where information literacy instruction – whether using PBL or some other approach – should be integrated. He advocates library-hosted information literacy and research instruction in other courses rather than relying on the First-Year Seminar as the "…one chance to 'get the job done'" (p. 517). Loanne Snavely, Head of Instructional Programs at Penn State University Libraries, rounds out the final article in this series. As a library administrator, her article was a nice coda to the challenges that PBL presents for instructors and librarians; moreover, it brought up issues that normally do not receive mention, specifically, how the institutional setting can impact the success of PBL (in terms of requirements for the classroom); the scalability of PBL (in terms of resources and personnel); and specific steps that administrators can take to 'create a climate' in which partnerships, such as those required by PBL, can flourish (p. 529).

Summation



The Venn diagram above indicates the relationships of the three components of my synthesis project. The target of my inquiry and the focus of this literature review is the green almond-shaped section. From the literature on information literacy I have gained a deeper understanding of the history and "loaded" quality of the concept. Lawrence McCrank's spirited discussion of information literacy will stay with me for its charge to emancipate learners and for its optimism. The literature on critical thinking, in particular the work from Tim Moore, reminds me that I need to stay clear of a narrow construction of what it means to be a critical thinker. While I still feel that the "bag of tricks" can be useful tools in some contexts, a good rule of thumb to remember is John McPeck's formulation that the critical thinker … knows what and when it might be reasonable to question something (1994, p. 12). The problem-based learning

component is best emulated by reference to the corpus of work done by librarians in all segments of education; indeed, it is my goal to add to this literature in the future.

Having thus imbued myself with what others find significant in the information literacy, critical thinking, and problem-based learning triad, I turn now to a fertile growing media - my own experience - to take this inquiry into its personal, experiential phase.

ACT II

CCT PROVIDES THE BASE FOR EVERYTHING THAT COMES AFTER…

Formal learning is only one aspect of knowledge creation. The other is experience. Act II shifts my project into its narrative phase, in which a major (and continuing) influence has been my tenure as a student in the Critical & Creative Thinking Graduate Program. By what follows, I hope to highlight not only the connection between the academic core of CCT and the development of my project, but also to pay tribute to the faculty and students who have been essential to my development as a reflective practitioner and scholar.

Backstory

How does one become a critical thinker? When I first posed this question to myself, I was not even aware that there was an established body of research in "critical thinking." All I knew was that in my work as a community college librarian, I had not seen a lot of it going on among the students I encountered on a daily basis. Students seemed to have difficulty understanding the requirements of their research assignments and knowing where to start and how to proceed in researching a topic. Many were unfamiliar with the tools and resources I took for granted: the library catalog, subject encyclopedias, online databases, the difference between a magazine and a peer-reviewed journal, and so on. I was continually flummoxed when, after a one-on-one demonstration of how to locate pertinent articles in an online database, the only comment a student would make was, 'Can I print this?' 'But you haven't even read the article yet!' I would protest. 'That's OK, I just need one article…' was invariably the reply.

Even more discouraging were my attempts to engage students in interpreting their research assignments. A student once came to the reference desk and asked for a subject encyclopedia. 'No problem,' I said, 'what's the subject?' He looked at me. I asked to see the assignment. It was from an English instructor we revered for "chunking" his assignments into manageable tasks that built on each other. I tried again. 'What are doing your paper on?' He looked at the floor. I realized that I was putting him on the spot but I could not help blurting out, 'But you've got to have a topic! How else are you going to know what subject encyclopedia to choose?' Things were getting sticky so I quickly asked, 'What are you interested in?' 'Sports.' 'Great! We have an encyclopedia of international games right over here!' He sat down with the book, examined it and answered the questions on the assignment sheet and went away happy, but I was struck once again with the enormity of the gaps that students bring to library research. This student had come to the library expecting that "a" subject encyclopedia was something that could be pointed to on the shelves. Even when we read his assignment together, he did not understand that the task was to choose a subject area or topic, then to find a work in a particular format on that subject or topic.

My point in presenting these little vignettes is not to castigate students for their lack of knowledge, but to explain that, at that time, I felt there had to be something I could do to at least foster a critical reading of the assignment. It was the lack of attention to the wording of the assignment, I thought. Or it was the inability to process ideas and steps in a systematic and logical manner. Maybe they just did not read critically, period. That encounter (and the many that had preceded it) marked the beginning of my mission to develop a critical thinking approach to library instruction, beginning with the actual assignment.

To prepare for this new vocation and to hone my own thinking skills, I enrolled in an online class in critical thinking from California State University at Sacramento. I learned about claims, pseudo-reasoning (the fallacies), causal and other types of arguments (I will never forget 'Post Hoc, Ergo Propter Hoc'). The Moore and Parker (2000) Critical Thinking text I used is still being used today in the Philosophy 110 Critical Thinking course at Rio Hondo College, although I note in passing that the 8th edition has been jazzed up considerably.

I enjoyed the class but it left me feeling that I needed much more practice and drill in spotting pesky fallacies before it would ever become automatic with me. I also began to question whether mastering informal logic techniques could really be the cure for the problems students had with understanding their assignments or doing library research. I went back to researching on the Internet for critical thinking courses and one day spotted the Critical and Creative Thinking Graduate Program at the University of Massachusetts Boston. As I fantasized about how I could go to Boston for a year, my thought was that I could live with the creative part if I could only get the critical thinking part! Although I had been up for a sabbatical leave the previous year, I had stepped aside due to not having a plan for a project. With my new mission beginning to take shape, I quickly wrote out my sabbatical proposal, applied to the Program, and, as though it was meant to be, I was accepted.

Becoming a student again in the CCT Program

There is no better preparation for designing curriculum or teaching than to become a student again oneself. I use this section to review the courses I took in the Program in order to highlight or foreground insights and knowledge that, cumulatively, generated a vision for the synthesis project that you are reading today.

My first class in the summer of 2003, which happened to be Critical Thinking, nearly bowled me over. It had been years since I had read anything more substantial than Victorian crime novels and even longer since I had written anything more weighty than family emails. But the greatest adjustment for me was the amount of interaction in the class. We formed groups, we discussed readings, we planned projects together, we ate in class – wow! Had school ever changed in the intervening 25+ years. Quite frankly, initially I resisted some of this. I'm not a big talker and I found the constant interacting and pressure to have something to say quite exhausting and alien. On the other hand, I found listening to other students extremely rewarding and I found kindred sprits in that class that remain my friends today.

My first chance to write on the topic of infusing "information literacy" skills into library instruction came in CCT 601. [For a while, librarians were divided as to whether to go with information competency or information literacy; I threw my lot in with the literacy group]. By then I was deep into Developing Minds: A Resource Book for Teaching Thinking, edited by Arthur Costa, which provided my first glimpse into the work that has been undertaken in the curriculum for teaching thinking. I quickly established my "favorites" – David Perkins, Shari Tishman, Robert Swartz, Barry K. Beyer, and Arthur Costa. I enjoyed dipping into Tishman and Perkin's book, The Thinking Classroom (1995), but found the material more applicable to elementary and secondary school audiences than the students in which I was interested. The anthology edited by Kerry Walters, however, was a different matter. Re-Thinking Reason: New Perspectives in Critical Thinking (1994) was a revelation to me. Walters' introductory essay, "Beyond Logicism in Critical Thinking" introduced me to the notion of the 'received' model of critical thinking and in the essay he went on to describe what he called the 'second wave' of critical thinking whose "…theorists argue that logicism's normative/methodological standards of

universality, objectivity, and abstraction, when examined from a nonlogicistic perspective, in fact reveal themselves to be disguised justifications of *totalization*, *desubjectification*, and *decontextualization* (p. 10, italics in original). Although I hadn't a clue about what these terms actually meant, I had some inklings, and perusing the other essays in the book confirmed my sense that this richer, more complex version of critical thinking was what I wanted to know more about. Peter Elbow's Writing With Power (1998) also became a much-thumbed book even as I struggled to follow his advice, being used to critiquing every word I lay down on paper before the ink was dry.

The summer of 2004, before my sabbatical year officially began, I was back at UMass Boston taking CCT 618 Collaboration and Organizational Change. Looking back at the *Professional/Personal Development Workbook* that I put together at the time, I see many CCT tools and techniques that were unfamiliar to me then but grew on me as I progressed through the Program. The three-workshop format was ideal for a summer course – the skills modeled and used in the Diversity, Teambuilding, and Facilitating workshops are all hugely important human and social relations skills; some of which I have internalized and use on a daily basis at the reference desk and among my work colleagues. I wrote a "Plan for Practice" that summer that itemized ways to integrate the insights I gained into my workplace. I've found this a valuable document to help keep me thinking about how to effect change.

I took CCT 602 Creative Thinking, CCT 698 Practicum, and PHIL 501 Foundations of Philosophical Thought in my first semester as a full time graduate student. The reading and writing demands were great but somehow I managed to keep up and, moreover, began to relish and feel at home in 'the academy'. What a delight Creative Thinking turned out to be! Given my sole interest in critical thinking, I had predicted that Creative Thinking would be a kind of 'fluff'

course, but - it had to be taken. Instead, keeping up with the weekly readings and journal entries, the two reflection papers, a final paper, in-class activities and a presentation on the life of a creative person was as deeply involving and rigorous as any class I had ever taken. Though I sometimes railed inwardly at the journaling, I am so pleased and thankful that I did it faithfully. My project on physicist Richard Feynman (1997) was one of the best things that I've done in CCT. Selecting the visual, audio, and textual elements for that Powerpoint presentation occupied me for weeks and it was a pleasure to work on it in the evenings after classes were finished. Creative Thinking allowed me to see that I was creative and, in time, I've come to enlarge my definition of creativity to include the ways I have conceptualized and planned the activities that eventually formed part of my online information literacy class.

CCT 698 Processes of Research and Engagement (Practicum) was my first introduction to formal research methods. The readings provided examples of descriptive research, participant action research, and critical ethnography. We were to prepare a research proposal of our own choosing based on a social or educational issue in which we were interested. My proposal was :

> To create curriculum that can be adapted/customized into a semester long paired-course module or a 2-session "research component" module. The semester long course would be taught along side such introductory courses as English 101, Sociology 101, Nursing, etc. The two-session module could be adapted to any discipline (history, economics, English, psychology, environmental technology, etc.) and marketed to discipline faculty as a more in-depth research/information literacy component than the one-shot library orientation. (Coe, 2004, unpublished manuscript)

As I followed the steps laid out in the CCT 698 syllabus and consulted with peers in the seminar, I felt the same ambivalence and concern over the structure of my proposal that I experience now, in the sense that my project does not "fit" into a typical research paper or curriculum unit. This synthesis project is indeed a hybrid personal narrative/curriculum unit, so there is always a tension involved with alternating between the norms of research papers (was

the Introduction adequate? Does the literature review follow the guidelines?) and the more personal and experiential format of one's own story/journey. The Practicum course prepared me to read and digest what others had done, and how to learn obliquely what research sounds and looks like in many different disciplines.

In the process of reviewing the literature in information literacy and critical thinking for my proposal, I would come across occasional articles that mentioned a new-to-me pedagogical approach called problem-based learning. The more I read about this approach, the more sense it made, especially in terms of providing a naturalistic setting or context in which students could learn the various tools and strategies of library research. Meanwhile during the in-class discussion of our literature reviews, no fewer than three of my fellow 698 students provided feedback to me on slips of paper saying, "See Nina [Greenwald]!" It was indeed a stroke of luck to discover that there was a CCT professor who was an expert in problem-based-learning! Adding a third prong to my proposal, I continued to collect material for my literature review and resolved to take the course in PBL the following semester. I wrote my chapter on methodology as we progressed through the phases and tasks in the seminar. It included my goal, population, data collection, lesson template, sample PBL problems, and how I proposed to implement and assess my curriculum development project. Writing each section forced me to concretize what, up until then, had been a vague dissatisfaction with the status quo. CCT 698 provided me with a thorough grounding in the forms and conventions of research methods; but the work in class was not always deadly serious. In addition to the rather dense articles we read, we also had some fun. I laugh today when I re-read "How to Speak and Write Postmodern" by Stephen Katz (1995). At the end of one class, we playfully re-cast our individual proposals into 'postmodernspeak' and I think my project ended up: "Subject-oriented pedagogical architectures mediating knowledge

acquisition within hierarchically-based, "old world" linguistic forms and processes among situated learners." I'm not sure, though, because I'm not sure what it is that I just wrote!

The third course I took that first semester was PHIL 501 Foundations of Philosophical Thought. It would not be an exaggeration to say that taking this philosophy course was a life-changing event – in the sense that I discovered a deep and powerful interest in applied ethics, particularly bioethics. I had always enjoyed the philosophy courses I had taken as an undergraduate, but now as an adult, such enduring questions as *What is a person? What is the right thing for me to do? What do I know?* moved me to much deeper reflection. I became wholly engrossed in thinking about the issues of abortion, human embryo research, and assisted suicide, among others. We wrote short papers on the topic-of-the-week, helpfully guided by "questions to consider" - that provided the chance to grapple with many philosophical themes. Our in-class discussions on these topics were often the highlight of my week. During the semester, each student made a class presentation that varied from leading the discussion on the readings for the week to guiding an activity on a related topic. My presentation consisted of four case studies on the *ethical dilemmas in human reproductive technologies*. The first involved each member of the class role-playing a member of a hypothetical Ethics Committee that was meeting to consider the safety, ethical issues, and implications for society of a couple's request for reproductive cloning [not possible for humans at this time, of course]. The second case study was similar to the first but related to a lesbian couple's desire for reproductive cloning. Students were divided into two groups; one group took the pro perspective and the other took the con perspective. The ensuing discussion was very interesting with realistic emotion and dialogue coming out of the debate. The last two cases dealt with the issues of so-called "savior siblings"

and the ethics of using preimplantation genetic diagnosis (PGD) for a woman with early-onset Alzheimer's disease in order for her to have a possibly disease-free child.

Looking back, my final paper for the course – *How our definition of 'the person' impacts or has implications for the way in which we respond to various ethical/moral issues such as abortion, stem cell research, and euthanasia* - connects to my present synthesis project in that both were written to:

> …mimic the kind of process that I would like to see my students (and myself) go through when faced with deciding where we stand on difficult moral and ethical issues. In the process, I will hopefully be modeling and exploring several of the themes of th[e] course, such as "a) the articulation and clarification of ideas; b) identifying and seeking alternatives to basic assumptions and resting points; c) evaluating thinking and reasoning; d) considering multiple perspectives or frames of reference; e) developing the capacity to think philosophically" (Millman, 2004, as cited in Coe, 2004, unpublished Final Paper Proposal).

The work undertaken in my philosophy class thus prepared me to become a better critical thinker and scholar; I would even say launched me into a whole new intellectual endeavor, by opening up new areas of interest that would influence the trajectory of my CCT studies.

Spring semester 2005 dawned with three new courses: CCT 611 Seminar in Critical Thinking: Problem-Based Learning, PSYCH 550L Advanced Cognitive Psychology, and HSCI-E-137 The History and Ethics of Biotechnology, a Harvard Extension class that I took as an independent study.

I consider my course in PBL to be a luxury that few of my students will probably ever experience, in terms of having an entire semester to follow the 10-step PBL process outlined in the course text and activities that included encountering an ill-defined problem, through to the stages of inquiry, to conducting the self-assessment (Greenwald, 1999). Our class formed into groups after brainstorming a number of problem possibilities and classifying them into broad categories. My group worked through the IPF questions (what is interesting, puzzling, and what

is important to find out about this situation/scenario/problem) with several iterations before we reached our initial "problem statement":

> When it comes to grappling with the difficult issue of death and dying, there's a great deal that's lacking in understanding in our culture. There's no question that religious, social, psychological, and who knows what other factors interfere with prioritizing death and dying as an important thinking/learning issue. It remains one of those "taboo" aspects of life to stay away from, better left up to each person or family to cope with at the time in whatever ways they are able. Ultimately, such 'ostrich' behavior on the part of our culture leads to more, not less, problems for people.
>
> Can people be helped by a more open discussion of death and dying? Can they learn strategies to better prepare themselves and their families to become better problem solvers and decision-makers with respect to this inevitable part of the life cycle? What kinds of proactive roles can be taken by whom in preparing our citizens for addressing this key societal issue? For openers, these are just of a few key questions that need to be asked. (Coe, Gartner, Hatano, & McLaughlin-Hatch, 2005, "The Art of Dying" unpublished manuscript.)

Our group's audio/visual/textual project, "The Art of Dying" experienced a few birth pangs before we presented it at the end of the semester, but these temporary stumbling blocks were all part of the process. As we continued through the PBL steps by participating in group activities, targeted readings, reflection on the process, and journaling in a personal *PBL Encounter Journal*, I had many occasions to take "mental notes" about problem-based learning. I can now select from the insights I generated about the process as a whole in order to apply them to information literacy sessions to be described below. But before, that, I need to complete my catalogue of CCT courses, continuing with the cognitive psychology course that is also a cornerstone of the Program and contributed so much to my development.

Advanced cognitive psychology was unlike the other CCT courses I had taken up to that point. Lecture-based, it was more traditional in delivery and format. I needed to familiarize myself with the concepts and theories in very short order – fortunately this was assisted by several very good texts - Margaret W. Matlin's Cognition (2005) and a knowledgeable and

animated adjunct professor. Additional texts included White Gloves by J.Kotre, A Man Without Words by S. Schaller, and The Emotional Brain by J. LeDoux.

Resurrecting my rusty note-taking capabilities proved to be a bit of a chore at first, but very worthwhile as I learned a great deal from the lectures. These were augmented by Internet-based lab exercises that each required a short "response paper". The final project in the course was a hypothetical grant proposal. There were so many topics in the course that would eventually be useful to me in designing an information literacy component – ranging from theories about memory, perception/imagery, decision-making, and, appropriately, problem-solving, to work being done on attention, language and cognition, and emotion. We touched on the contributions of learning theorists such as Vygotsky and Piaget. Overall, it felt like three semesters crammed into one! The final grant proposal was a useful exercise because I again used my interest in information literacy as the basis on which to construct a faux proposal. Cast as a formal proposal to develop curriculum, the document contained a statement of my goal, objectives, background and context, relevance of proposed research to perceived gap, population, data collection, implementation, assessment, and dissemination of results. As I completed each of the component of the proposal, I clarified my thinking about the project. I also learned that to reprise the same idea helps build a matrix of associations and insights that can only come from sustained work in disparate perspectives. In the process, you create something that is simultaneously a pleasurable obsession as well as a burden!

I was fortunate at this juncture to have stumbled upon a way to give rein to my nascent interest in bioethics. Although disappointed that the CCT course *Biology in Society* did not run, I was pleased to discover the *History and Ethics of Biotechnology* course through Harvard Extension. The course examined biotechnology and genetic engineering through their historical,

social, political and ethical contexts. The lectures were always interesting; the interaction among students in the class as spontaneous and substantial as any course in which I've participated; and the reading was absorbing and provocative. Overcoming a characteristic reluctance to speak up in the large lecture theatre, I joined the discussion group that met before class, and was richly rewarded by the conversations and personal spin that students put on the topics. Three essays and a final exam were required in the class: in the first I responded to course readings by Rifkin (1999) and Wade (2001), with a little of Lewontin (1991) thrown in for good measure on where each writer stood on "the gene" as an organizing structure. For the second essay I wrote an historical analysis of the Ethical, Legal, and Social Implications (ELSI) program of the Human Genome Project – a topic that continues to interest me to the present day. For the third essay, I delved into the debate about conflict-of-interest regulations in the National Institutes of Health. (NIH). This variety of work, as well as the Reflection Paper that concluded the semester set me on a path that led, for a while, away from information literacy but to which I would return the following year.

Year 2 in the CCT Program

Much as I would have preferred to remain in Boston and a full-time graduate student, my sabbatical year came to an end and I returned to my job as librarian at Rio Hondo College in the fall of 2005. At some point during the sabbatical year, I had realized that I was not content to stop at the CCT Graduate Certificate level – I wanted to continue my studies into the Masters degree level. I was accepted as a M.A. candidate and this meant that all the remaining courses I needed would have to be done by distance education. In this I am forever grateful to the

accommodation made for me by CCT faculty to participate in subsequent classes by using Skype, the Internet phone software.

I started the fall semester with a course that dovetailed with my new interests – PPOL-G 749L Science, Technology and Public Policy. I attended the first and last classes in person and the rest of the semester I enjoyed being a disembodied voice in the middle of a table in Boston!

The course structure consisted of an initial 3-week problem-based learning session, followed by sustained readings and discussion organized around the themes of Boundaries and Uncertainties. Jumping straight into the PBL session was challenging and extremely rewarding. We needed to quickly respond to the request for information by the fictitious National Policy Analysis Group with respect to the science-policy connections involved in improving responses to extreme climatic events (Hurricane Katrina had just occurred so the topic was a timely one) . Specifically, "*who—at various levels of political organization and decision making—needs to know what kinds of things that different natural and social sciences have learned or could learn if appropriate short- or long-term research were undertaken—and how that knowledge can be made available to them*." Our input was to take the form of 'briefings' that *provided or pointed to key resources that could take the form of issues, concepts, arguments, evidence, references, websites, summaries of case studies, quotes, images, organizations, people to contact, research already under way, research questions and proposals* (Taylor, 2005, "Syllabus"). Unlike the PBL course, each member of the class selected his/her own 'angle' on the request from the Group; after some preliminary research and reflection, I decided to investigate and report on "Contrasting approaches to risk reduction: Cuba, FEMA, and Community-Based Disaster Management." Although I could not be physically present for the public presentations, I participated via conference call. This kind of real-world research, data collection, synthesis and

presentation of results in a narrow time frame was the kind of PBL exercise I hoped to eventually conduct (appropriately adjusted to the community college level) and it was a very valuable experience.

The class moved on to consider issues around science and democracy, science and politics, risk, responses to genetic engineering and genetic screening, humans as experimental subjects, and other relevant policy topics. A major paper informed by the course themes and readings was the final piece in this graduate Public Policy course. My final paper examined the consensus conference as an exemplar of the connections I saw between the ideals of science, deliberative democracy, and participatory technology assessment. As I wrote in my response at the end of the semester: "This course challenges you to think broadly and deeply about the institution of science and its connections with technology and the public. Readings are chosen to reflect the diversity of approaches that different writers have taken - especially with regard to the historical development of science and technology, the use of science to further other agendas, and the larger cultural meanings and impacts of science that continue to evolve."

Spring semester 2006 brought information literacy back into my sights when I began CCT 693 Seminar in Evaluation on Evaluation of Educational Change. This course was the ideal vehicle with which to (re)consider the work I had done on formulating ideas for information literacy sessions – this time from an evaluation perspective. The *Cycles and Epicycles* framework afforded an effective 'container' in which activities such as strategic personal planning, the KAQF (a variation on KNF process encountered in PBL), and the evaluation clock could be exploited and developed. Interpersonal strategies such as supportive listening and focused conversation helped to engage others in your project, and you in theirs.

The course also enabled a much deeper knowledge and appreciation of action research as a philosophical and political choice. As explained in Introduction to Action Research:

> AR is a form of research that generates knowledge claims for the express purpose of taking action to promote social change and social analysis. But the social change we refer to is not just any kind of change. AR aims to increase the ability of the involved community or organization members to control their own destinies more effectively and to keep improving their capacity to do so. (Greenwood & Levin, 1998, p. 6)

One of the readings from the course that clarified and differentiated action research from other types of educational research for me was, "Classroom action research starting points" from the Madison Metropolitan School District. It states that: “Action Research involves problem-posing, not just problem-solving. It is not research on other people. Action Research is not just about hypothesis-testing or about using data to come to conclusions. It is concerned with changing situations, not just interpreting them” (MMSD, 2001). This is the power and the promise of action research!

Understanding this formulation was a turning point in my plan to offer information literacy sessions based on a problem-based learning approach. I realized that my rather dim view of the 50 minute “one-shot” was based on my own opinions and frustrations. Therefore, rather than making the assumption at the outset that a PBL approach was “better” or “more effective” than the usual one-shot orientation, I now wanted to take a step back to establish a constituency group (composed of students and interested faculty) who would work with me in my quest for a more meaningful library orientation. I was inspired by Robin McTaggart’s words that, “Action research is not a ‘method’ or a ‘procedure’ for research but a series of commitments to observe and problematize through practice a series of principles for conducting social enquiry” (2001, p.249). The semester concluded on this idealistic note.

Year 3 in the CCT Program

Fall semester 2006 I was closing in on the final course for the Masters degree. CCT 694 Synthesis of Theory and Practice was the course that was going to allow me to knit all this together; instead, early in the semester I experienced a crisis of indecision. I was torn between continuing with my plan to develop and trial curriculum for information literacy sessions, and the desire to break out and pursue a topic related to my interests in bioethics and the social studies of science and technology (STS). I made myself a chart that plotted the pros and cons of my options as I saw them. This helped a bit – but not much. I talked to my Advisor; I tried freewriting; I lost a lot of sleep over this dilemma! Finally, I came to the realization that I had already invested too much in my original plan to jettison it at the end…

Re-cap of knowledge and ideas gained from CCT

The foregoing has hopefully set the stage for Act III, which will take up the story from the point where I decided to continue with the information literacy project. Before that, I want to acknowledge - in nutshell form - the intellectual debt I owe to the CCT Program:

Critical Thinking (601) provided me with a basic introduction to the core ideas and complexity that forms the basis for critical thinking;

Creative Thinking (602) unleashed new creative skills and tools that I could use both personally and professionally;

Collaboration and Organizational Change (618) encouraged me to practice being 'with others' in productive ways;

Processes of Research and Engagement (693) taught me how research gets done and became the site of my first formal entrée into its conventions and methodologies;

Foundations of Philosophical Thought (501) sharpened my appreciation for the larger questions and my critical reading and analytical skills;

Problem-Based Learning (611) allowed me to live and breathe the steps of PBL and gave me a firm grounding in the conceptualization and theorizing that underpins the approach;

Advanced Cognitive Psychology (550) added additional layers to my proposed project -- research on learning, memory and cognition would help in my eventual design of information literacy learning activities;

Science, Technology, and Public Policy (749) gave me an opportunity to engage with newly-discovered interests as well as driving home the reality that many so-called neutral domains (such as science) are socially-constructed, contextual, and agenda-driven;

Evaluation of Educational Change (693) challenged my original formulation of my "problem" and introduced a new method, action research, by which to tackle the project of information literacy instruction;

Synthesis of Theory and Practice (694), through its phases and tasks, has kept me focused on who I want to reach with this synthesis project; what I want to convey to them; and why I think this issue is important.

ACT III

I ENCOUNTER OBSTACLES AND FIND A NEW DIRECTION

I think everyone can agree that being in a state of indecision is a kind of hell - or at least purgatory. Luckily, my visit to that region did not last long. The narrative to follow will describe how I actually started teaching (finally!) - first in the voluntary workshops, and then in a semester-long online course. Simultaneously, I began another round of research to update my literature review from 2003, and in the process, discovered new, "radical" thinkers in my own profession. Here were librarians who did not accept the received canon on information literacy. I found people like Barbara Fister, an academic librarian at Gustavus Adolphus College in Saint Peter, Minnesota, who observed that at an Association of College and Research Libraries (ACRL) conference she had run into "...multiple instances of librarians referring to the Standards with the same familiarity cops have with the criminal code. How do you prevent violations of three point two point six on your campus?" (Fister, 2005). James Elmborg, mentioned previously in the literature review section, now advocates a 'critical information literacy' and argues that, "to be educators, librarians must focus less on information transfer and more on developing critical consciousness in students" (2006, p. 192). Cushla Kapitzke, Associate Professor in the School of Culture and Language Studies at Queensland University of Technology, writes about the instrumental or 'operational' approach to information displayed by most librarians - an approach that "…emphasizes the consumption of information but lacks metaknowledge because it neglects the sociocultural, historical, and ideological processes of knowledge construction and justification. Like the representation of libraries as neutral institutions and services, information and information literacy are similarly presented as unproblematic, atheoretical and apolitical"

(2003, p. 46). I found Thomas Eland, Department Chair of Library & Information Studies at Minneapolis Community & Technical College, who completely stopped 50 minute one-shots in his library because they were inconsistent with their decision to require credit course information literacy instruction. He writes that such courses can spend the necessary time it takes to contextualize' information literacy:

> It… helps to get students to realize that the way the world is currently organized is not some act of nature, but a social construction and that other options are possible if we as a society decide to make different choices. Before we begin discussions of how to find information we need to educate students as to the political, economic, and cultural realities of how knowledge is produced and the role of dominant and dissident ideologies and institutions and how they impact knowledge. If people don't have an understanding of these realities then their (sic) is no way that they are going to be able to realistically evaluate the information they locate (2004, 9 December).

I will re-visit these writers and others later in the chapter. For now, I need to return to the events that gave rise to these writers and their points-of-view.

Teaching workshops as a step toward my ultimate goal

Once I had made my decision to remain with the information literacy project, I got back on track. I created a personal blog (PBL@RIO) to document my process as a curriculum developer. I resurrected our so-called "Internet Workshops" as a stepping stone to my goal of working with a group of students in an action research project. I refurbished the format of the workshops to include more "active learning" components and hand-on exercises using the library laptops, and added a mysterious new workshop titled "Research Skills" which was PBL in disguise. I talked about the 'new' workshops during our faculty Professional Development day; emailed all faculty and left flyers in the Communications instructor's pigeonholes; advertised in the student newspaper; blatantly promoted them to students and instructor at the end of the library orientations I had been assigned; then sat back and …waited.

Two weeks without students went by before I realized that additional direct marketing was called for. I made a list of potentially receptive instructors in three or four disciplines and sent individualized emails and flyers through the college mail system. From this targeted approach, four faculty members responded positively, saying they would offer extra credit to their students for attending the workshops. One instructor had even photocopied my list and short descriptions of the workshops and had inserted a line for my signature! The tone of my first posting to the PBL@RIO blog was elated:

> Hallelujah! Eight students showed up for the Citing Electronic Resources workshop — the first eight to do so for any of the 4 workshops that I have offered these past two weeks. The lack of students is my own doing, though. I put the workshop schedule on the web site and posted a couple of flyers, and thought that would do the trick. After all, I am limiting the workshops to 10 students only, so I didn't want hordes showing up! After three workshops went by and still no students, I realized that I was going to have to be more targeted and aggressive in my marketing. I put together a list of around 22 faculty that I have either worked with personally (i.e. given orientations to their classes) or else just knew as people who were likely to be receptive to the idea. That was on Wednesday. On Thursday, the day of the workshop, the eight students showed up because their instructors were willing to give them extra credit for attending! And I received a number of very supportive emails from instructors as well. This is a great beginning. I intend to dissect and analyze each workshop in terms of what worked, what didn't, how I might improve, etc.

Hoping to snare as many students as possible, I offered the one-hour sessions twice per week. My colleagues in the library pretty much left me to it; no one offered to collaborate or to share the load.

Meanwhile, I began work on rewriting and revising the sequence of topics in the Library 101 Fundamentals of Research course that I would be teaching online in the spring of 2007. Rio

Hondo College uses the WebCT course management system, in which I have some experience (from teaching LIB 101 in 2001). I devised an *Outline and Timelines for Synthesis Project* in order to keep myself on task:

> II. Outline of weekly goals and tasks
> I will aim to complete one unit of the syllabus each week, which will include
> a. From the students' perspective:
> i. Goals/objectives for the unit.
> ii. Readings on the topic(s).
> iii. Activities that reinforce/extend/give opportunities to practice the knowledge, skills or tools introduced in the unit.
> b. From the instructor's perspective:
> i. Rationale for the readings and activities associated with the unit.
> ii. Estimation of the time required to complete the readings and activities (i.e. be realistic)
> iii. Evidence that critical thinking is required to complete the unit.
> iv. Evidence that PBL under girds the activities, where appropriate

It transpired that this was a tad overly optimistic, given my responsibilities at the Reference Desk, workshop schedule, committee meetings, and reading for the literature review II. Nevertheless, by the time I presented my Work-in-Progress in Boston in late October, I was well into, and consumed by, the details of the course mechanics.

As the semester came to a close, workshop attendance began to falter, but by then I had given the entire series of 5 workshops four times for a total of 20 workshops. Sixty-five students had attended over the course of the semester. Of those 65 students, 9 students were repeat attendees – and several of them completed all 5 workshops. The size of the workshops ranged from a minimum of 1 student to an average of 4 students. The greatest turnout was 8 students. To ensure I received feedback on how the students perceived the usefulness of the workshops, I had saved 5 minutes at the end of each workshop for them to complete an anonymous online feedback form. Information and comments I received indicated that students felt the workshops were definitely worthwhile. It is likely, however, that the feedback was biased by the fact that the

evaluations occurred just after they had attended the workshop. A more reliable method might be for the students' instructors to survey them a semester following their attendance at workshops. The experience of small, seminar-style workshops was a good 'fit' for me, and I know that many of the students who were initially hesitant to participate gained confidence as the weeks went by. For some of them, being on first name basis with a librarian was clearly a new experience and several continue to drop by the Reference Desk to chat whenever they are in the library.

As the semester concluded, the major question I had to ask myself about the workshop series was, did the workshops achieve my objective of snaring enough repeat students to form a core group that could participate with me in an action research project? The answer was no. Candidly, the only reason any of the students attended the workshops was to earn the extra credit points promised by their instructors. Although students in community colleges are probably like students everywhere, the fact remains that most of our students are at the very beginning of their academic careers. Their goals are mostly instrumental and utilitarian at this point - to pile up enough units to transfer or to upgrade their training or begin a new career. The additional commitments imposed by work, family, and other activities makes it difficult for students to take on any "extras" without a clear benefit for doing so. As I pondered these facts, I also came to realize that I would never be able to "experiment" with new ideas or approaches until I had my own 'captive' students. Fortunately, that was about to happen…

Teaching a class of my own - Library 101 online

My initial process in writing the curriculum for the online version of Library 101 was to "teach to the course objectives." I created a matrix that keyed the nine course objectives to the ACRL Standards and then to the units of content I had developed (See Appendix G). I was

interested to note that a majority of the objectives related to Standard 1: *The information literate student determines the extent of information needed*, and Standard 2: *The information literate student is able to access the needed information effectively and efficiently.* In other words, the emphasis in the course is devoted to the mechanics of information retrieval. At this time, however, I was working non-stop just to populate the course with select readings, activities, and relevant, informative Web sites that helped to illuminate concepts or provided additional examples and explanations of the concepts under consideration. As I will discuss below, I struggled with whether to stick to the traditional syllabus and essentially teach the course the way it had always been taught, or to infuse from the get-go the less "operational" (to use Kapitzke's term), more *critical* aspects of information literacy I had been reading about. Taking into account my dearth of teaching experience, I felt that I would probably need a few turns at teaching the course in the traditional manner before tinkering with it to any great extent. In addition, I wondered whether this particular introductory course was in fact the best vehicle in which to deliver the critical content to which I was now committed (in thought, if not in fact!).

I present examples of the course content in the Appendix, but I would like to note here a few of the innovations I did manage to include in the online course, beginning with a PBL unit. I still felt that some exposure to problem-based learning would be a valuable experience for students, even if I had decided against trying to structure the whole course as an exercise in PBL. As I relate in my blog posting of November 5, 2006:

I've worked all weekend (and during the previous week, of course) on planning the transition to the PBL portion of the course. I give full credit to my colleague Judy for suggesting a Los Angeles Times series of articles called "Altered Oceans" as a fertile scenario from which students can identify "problems" to research. The series has a wonderful web site here which I reveal to the students in the 7th week of class. I have assigned the 5 articles as readings, starting in Week 2, however.

The series of articles authored by Kenneth R. Weiss and others was an ideal means of introducing students to a range of high-interest and important issues from which they would eventually choose one in order to satisfy the requirement for the final Research Brief project. The articles covered:

> … the issues of our endangered seas, which are struggling to deal with the torrent of waste humans pour into them every day. Mankind is returning the seas to a time when algae and jellyfish ruled. Crucial habitats are falling victim to the changing chemistry of the water. Toxic algae are attacking the brains of marine mammals. Seals, dolphins and other marine mammals have been washing up along the coastlines in unprecedented numbers during the past few years. Red tides grow more virulent and sicken people on land. The poisons, produced by runaway algae off Florida's west coast, cause families to flee inland and emergency rooms to fill with people suffering respiratory distress. Torrents of plastic junk foul the remotest parts of the ocean. The seas are turning acidic, eroding the building blocks of ocean life (Weiss, 2006).

In previous Library 101 courses, students had selected their own topics for an annotated bibliography - which usually meant that they ran the gamut from sometimes wacky personal interests to substantial academic issues. My colleague Judy Sevilla-Marzoña (who is concurrently teaching the on-campus section of Library 101) and I wanted to put some boundaries in place while not restricting the choices too much and I believe this suite of articles worked very well for our purposes. Additionally, we look forward to comparing notes and projects at the end of the semester.

It took the first six weeks of the course for the students to read all of the articles, but I did not want to overwhelm them with too much reading at first (in addition to the textbook sections and other readings). I intentionally introduced "scaffolding" activities that not only asked students to think about what they were reading in the series, but also asked them to use that information in related tasks, such as coming up with a list of keywords, individuals, and organizations on which they could follow-up.

In addition to the PBL unit, the educational potential of using a wiki as part of a course structure had recently been introduced in one of my CCT courses, CCT 693 Evaluation of Educational Change. I really liked the idea of students being able to post their ideas to a wiki and to have those ideas built on or critiqued by other students in a collaborative manner. As I relate in my blog:

> I wrestled with how and whether to use a wiki for this part of the course and finally decided to go ahead with it. I think that the wiki's potential as a group-authored "brainstorming" space overrides its potential difficulties for those less technologically inclined. I want the students to record - in very rough form - the ideas raised by the articles that are personally interesting to them (I have a different page for each article, e.g. Tide of Toxins, Plastic Plague, etc.). From those rough jottings, I am hoping through feedback and discussion for each student to end up with the topic that intrigues them the most. This way I have some control over the spread of topics; the students have a range of choices plus the interaction that will hopefully happen on the wiki.

Without a doubt, this has been the most successful aspect to the course thus far. The students really engaged with the topics in the series; one student was so concerned for the plight of marine mammals that she visited one of the Marine Mammal Centers mentioned in one of the articles and plans to use her experiences and reading as the base for her Research Brief. Other

students were outraged at the issue of the plastic trash that circulates in the oceans. The energy created in the course by the students reciprocally commenting on each others' postings has validated the use of a wiki - and then some.

A third innovation as been the addition of a web page within the course (hidden from the students) that provides a rationale for each element in the coursework. For each unit of work that I created, I list the course objective to which the content applies; the relevant ACRL Standard to which it relates; a statement on "Why is this important?"; and finally, a section called "What worked/what didn't/what should be changed next time". Perhaps all teachers do this -- all I know is that by faithfully completing the items above for each unit we finish, I am in a better position to know what and how to tweak the content next time I teach the course.

The fact that the course is still on-going at the time of writing limits the conclusions and lessons I can report that I learned from it. However, there have already been shifts in my thinking, alluded to earlier, that I would like to take up in the next section. These shifts have to do with (re)looking at the concept of 'information literacy' in a more critical context than previously before and taking up the issue of how these insights might be used to adapt or alter my information literacy instructional practice.

A critical theory of information literacy

I'd like to first sketch the arguments of a few writers on critical information literacy, including the aspects or parts of their theories that I would like to take on board with respect to my own ongoing and future practice. The section will close with a few noteworthy examples of courses and/or activities and assignments that I feel meet the criterion of being "critical" in the expanded sense.

Cushla Kapitzke is Associate Professor in the School of Culture and Language Studies at the Queensland University of Technology . Two of her articles, similar in content but written for Australian and American audiences respectively, caught my attention and subsequently enlarged my understanding of information literacy (although I cannot agree with all she says nor do I pretend to do justice to the breadth and complexity of her arguments). In "Information Literacy: a Review and Poststructuralist Critique" (2003a), she dips her colors to postmodernist writers such as Foucault and Lyotard by arguing that to define information literacy by reference to pscyhologistic terms such as "abilities" or "skills" is not only inaccurate but unproductive. Instead, teachers and librarians need a critical theoretical perspective "that will enable learners to negotiate dominant and non-dominant knowledges and information sources" (p.57). Information literacy should be less about the acquisition of problem-solving skills in individual students and more about engagement with the sociopolitical ideologies embedded within economies of ideas and information (p. 61). Furthermore, "In the complex social world of today, it is not sufficient for students to seek a single version of truth that once was sought in a library book." (p. 62).

In "Information Literacy: a Positivist Epistemology and a Politics of *Out*formation" (2003b), Kapitzke fairly accurately, in my judgment, characterizes the library as:

> …a place where authoritative information is "found" and "interpreted." Through fact-finding activities, students purportedly develop an ability to "think critically" and to "solve problems." They are required to "demonstrate" the learning outcomes of such work, which are "facts learned in class." Propositional content can be "woven together" such that the "interrelated patterns of the world" are "revealed" to students. This view of knowledge and learning constitutes a positivist epistemology in which there are singular physical and social realities, or "worlds," separate from the student and accessible through language (p. 40).

Similarly, she takes issue with the "critical thinking paradigm" with which information literacy is associated. Most librarians, she contends, use "critical" in the sense of detecting flaws in logic,

factuality, and argumentation. The poststructuralist thrust of her argument is encapsulated in this quote from her article:

> For example, the "information process" as it is currently understood - define a problem; locate appropriate information; select, organize, and synthesize resources; create and present a solution; evaluate the effectiveness of the task completion - is devoid of any opportunity for students to examine the social context and construction of either the "information problem" or its "solution." Neither the constituent assumptions of the problem, its process of formulation, the subsequent solution, nor the information used in solving the problem is contextualized or problematized. This, in turn, precludes the availability of multiple and alternative solutions and naturalizes the information process, making it immune to discursive interrogation and transformation (p. 51).

Christine Pawley, Associate Professor in the School of Library & Information Science, University of Iowa, suggests that librarians [should] pay critical attention to the language used in thinking and writing about information literacy. "Rather than focusing on negotiating some essentialist concept of the term and on the best techniques for transmitting the agreed-upon skills, we should also be debating the issue of what, fundamentally, we are trying to do when we engage in information literacy practices, however defined (p. 445). She recommends the following components for a critical approach to information literacy:

> 1. Our information literacy should highlight, in addition to the tools and skills metaphor, the importance of learning about context and content in understanding how information "works";
> 2. We need to be both explicit about the moral and political commitment to flattening rather than reinforcing current information and literacy hierarchies.
> 3. We need to recognize that "information access" is not just about information consumerism but also about individuals and groups of people actively shaping their world as knowledge producers in a way that renders the consumer-producer dichotomy irrelevant.
> 4. We need also to come to terms with the fact that freedom and control perpetually vie with one another in LIS, especially in the arena of information literacy. (p. 448).

James Elmborg, whom I introduced in the literature review section, argues that to be educators (which is the direction in which he sees the profession heading) librarians must focus

less on definitions of information literacy and information transfer and more on developing critical consciousness in students (2006, p. 192). Drawing on Freire's critical pedagogy, Elmborg asks: What is the role of the library in the Freireian vision of critical literacy? Is the library a passive information bank where students and faculty make knowledge deposits and withdrawals, or is it a place where students actively engage existing knowledge and shape it to their own current and future uses? He makes a persuasive case for librarians to be more involved at a fundamental level in the educational process; one that would require "…extensive knowledge of pedagogies and of the cultures of discourse communities of higher education" (p. 181). Clearly, not all librarians would be interested or up to the task, given their enculturation into the more traditional "banking" vision of librarians and library practice; but his article does provide rich food for thought.

All of these writers, and others (Anderson, 2005; Boyce, 1999; Swanson, 2004; Simmons, 2005; and Ward, 2006) either implicitly or explicitly employ a postmodern framework which, to my mind, is the sort of lens that can be useful if used sparingly.

When Kapitzke suggests that information literacy should be more concerned with the sociopolitical ideologies embedded within economics and ideas of information, exactly how does that happen? Well, she does give an example:

> Take the familiar example of a class project in which students rehabilitate an environmentally degraded corner of the schoolyard by developing a patch of rainforest. Different attitudes and approaches to environmental degradation and regeneration could be explored by collaboration between teacher and teacher librarian to form working relationships with pro- and anti-conservationist groups. These might include a local Landcare group, indigenous communities, an environmental and/or civil engineer, a university ecologist, a town planner and a farmer. A critical information literacy would show students how each of these groups have different languages, values, interests, and agendas (i.e., in Gee's 1990 terms, 'discourses') through which they view and work on the world. Each would contribute different perspectives, ideas, and information. The work of the teacher, teacher librarian and students is not to find the 'facts' about the environment, but to

> problematize and contextualize those differences through the study of discourse and text (2003b, p. 61).

Since her example is aimed at primary or secondary students, my question is: with what conception of "pro- or anti-" conservation groups would the average student (even a community college student, come to that) be expected to possess? Of course, a definition for conservation can be used that would be understandable to those age groups, but is it realistic that the views of a university ecologist vis á vis environmental degradation be used with the students Kaptizke has identified? Is not their lack of sophistication/life experience precisely the reason that the patch of rainforest in the corner of the schoolyard, works? Even to use the word 'discourse' at the community college level would require students to have a more elaborate and differentiated knowledge base that many do. So, appropriately scaling postmodernist pedagogical approaches is important.

I certainly agree that students need to learn more about the organization, production and consumption of information. The syllabus for Library 101 specifically includes such an objective. To cover this content, I asked students to visit an Information Tutorial at Minneapolis Community & Technical College Library - http://www.minneapolis.edu/library/tutorials/infolit/ and to complete an exercise that asked them to read and respond to the "Politics of Research" chapter in Brian Martin's Information Liberation (1998, p. 123-142). Most students had difficulty with this exercise, having no frame of reference with which to evaluate the ramifications of issues like the variable funding of disciplines that produce knowledge, or the shaping of knowledge.

In retrospect, I understand that I need to start with where the students are, not where I wish them (and myself) to be. Martin's chapter is actually a very good choice for an introduction to the "existing system" of knowledge production because his writing is clear and utilizes

examples that should be understandable to non-experts. He models the populist approach he advocates in order to bring about an alternative model of research: community participation and control. My 'mistake' in assigning the exercise was the expectation that students would have "prior knowledge" that would allow them to contribute thoughtfully to the piece without any scaffolding on my part. Such a scaffolding activity could have asked whether the concepts of 'discipline' or 'hierarchy' had counterparts in any situation or occupation with which they were familiar. Reasoning by analogy could allow students to build an understanding that could be applied to the propositions espoused in Martin's chapter: that "the work of professional researchers is strongly influenced by funding, disciplines, hierarchy, and competition. As a result, it is mainly useful to corporations, governments, professions and researchers themselves" (p. 123).

Another strategy, suggested by Michelle Holschuh Simmons (2005), would be to model asking questions such as "Who benefits from having this information published and disseminated?" "Whose voices are not represented in this research?" And, "What 'counts' as knowledge in this discipline?" (p. 308). To understand and apply a critical information theory means that concerns about context and content in information needs to be interwoven throughout an information literacy course -- not confined to a single appearance in the syllabus.

Barbara Fister, introduced at the beginning of Act III, states that it isn't necessary to assign a full-fledged research paper to give students experience with finding sources and putting them to use (2001). Her suggestions for assignments embody the kind of critical thinking and inquiry that I hope to do more of with the students in my online course. For example, under "Exploring Discourses" she suggests having students study the ways different disciplines treat the same subject or the ways different audiences - e.g. popular vs. scholarly - shape the

presentation of information by locating and analyzing materials that approach the same topic from different directions. Concepts addressed in this assignment "recognize differences in discourse conventions; recognize the importance of audience in texts; learn to differentiate between popular and scholarly sources" (para 7). Another suggestion is to have the class generate a list of cutting edge issues in a field by having them survey the current literature and identify topic areas that are especially under debate. Concepts underlying this exercise recognize that current literature in the field clusters around areas of uncertainty and controversy; and recognize that new knowledge often comes from asking interesting questions (para 8).

These assignments represent only two of the dozen or more suggestions that Fister provides. Now that I know what to look for, no doubt other examples of creative alternative assignments exist in the literature. While I acknowledge the "consciousness-raising" value of writers such as Kapitzke, Pawley and Elmborg, without whom I would not have discovered critical information literacy theory, I think that the task before me now is to integrate in praxis what I have learned about in theory. The concluding Epilogue will contain some ideas about how I intend to do this.

EPILOGUE

My search for a meaningful information literacy course began with my desire to help students understand and translate the requirements of their research assignments into specific tasks: 1) define the problem; 2) devise a solution strategy; 3) carry out the strategy; 4) evaluate the strategy. The mechanistic notion of steps or "skills" turned out to be only one rendering of information literacy, however; students need to understand what information is, where it comes from, how it is produced, and for whom. In other words, they need to learn that there are frameworks in which information can be understood: some that support a certain political economy, for instance, and some that challenge it. Information producers are not "neutral' but act in ways that further their actions, beliefs, and worldviews. But students also need to learn how to synthesize information from a variety of sources and use it to construct understanding and knowledge of their own. This is precisely what has occurred in my own personal and professional journey through the Critical & Creative Thinking Graduate Program. Through a sustained inquiry process, I have acquired new tools, lenses, and most importantly, the disposition to continue asking questions and to dig deeper.

What started out as a rather lofty aim - to investigate how the library and librarians could best help students acquire the kinds of information skills and knowledge that would help them succeed in college and in life - was "deconstructed" as I progressed through critically reading and thinking about information literacy, critical thinking, and problem-based learning. In doing so, I altered my assumption that there are discrete skills that can be unproblematically applied to a range of information needs and learners. The ACRL Standards provide useful benchmarks, but do not - and cannot - encompass the totality of how "information literacy" should be understood.

Critical information literacy theory provided a needed "situatedness" to my thinking. Where previously I had a "one size fits all" approach, I see now that I can make room for a more student-centered approach - one that utilizes their previous knowledge to solve problems. These are all insights that I have yet to put into practice. But at least now I have a chart and a compass - I have a better idea (always open to revision!) where I'd like to end up. Surprisingly, during this process, I also find that my animus toward the 50-minute one-shot has diminished. Rather than throw the baby out with the bathwater, it would be better to "subvert" the traditional library orientation in small ways, such as asking more questions about the topics I am demonstrating - "what kinds of information do you think we're going to find on illegal immigration?" "Why are there three times as many newspaper articles on Indian gaming than there are scholarly journal articles?" I can do the same at the Reference Desk. No one option for teaching information literacy is sufficient on its own, but all are necessary. A formal information literacy credit course such as Library 101; individual topical workshops; "add-on" components to discipline classes or some other combination or format, there is no one way to achieve the information literacy goals of helping to produce students who can think critically.

Serendipitously, an opportunity has arisen that was not on the horizon when I began my quest back in 2003. I will be joining a Learning Community in the fall of 2007 and so begin my first collaboration with another faculty member. Students who sign up for GIS 120 - Introduction to Geographic Information Systems will be automatically enrolled in Library 101- Fundamentals of Library Research. This means that students will be learning to do research within a particular disciplinary framework:

> GIS is a powerful, very marketable tool that allows information to be displayed to a location, such as people to an address, crime to a demographic area, species to a slope and aspect then analyzed spatially combining *critical thinking and problem solving* by layering other information to give a better understanding of why certain populations vote,

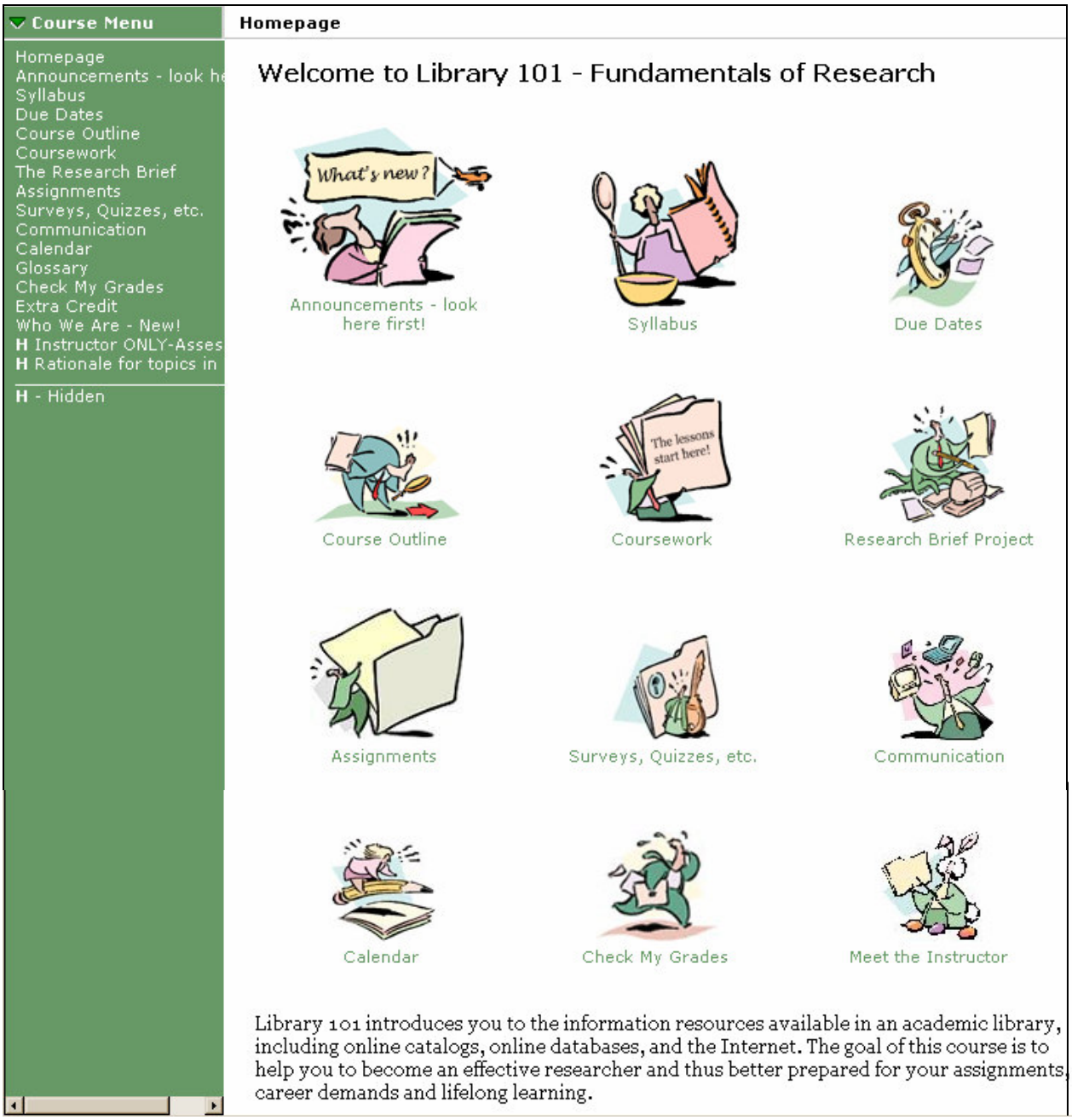
> spend or where species can be found. Classic examples…[range from] spatially displaying information for environmental analysis, [to] analyzing social demographic & voting patterns, …[to] geographically displaying …where populations [can be found that] are the [most] likely to purchase the Washington Post ...
> (Roberts, 2006, my emphasis).

The GIS instructor and I will collaborate on the introduction and sequencing of topics in our respective courses; I expect that the readings and activities in Library 101 will complement and inform the skills and concepts students learn and apply using geographic information systems. I have been looking for models of applied courses linked with library research courses and discovered that a new class offered at the University of California, Davis, may provide some insights. The Davis course uses GIS to help students discover how biological, physical, and social sciences are linked with societal issues and cultural discourse. *GIS and Society* was offered in spring 2006 as part of the Science and Society (SAS) program at UC Davis (ESRI, 2006).

My feeling is that this change in direction and new collaboration may provide me with a way back to my "road not taken": the social studies of science and technology. But even if it does not, I'm where I need to be because from this point forward, I am open and prepared to continue developing as a 'work-in-process'.

APPENDIX A.

Library 101 - Course Homepage



Appendix B

Library 101 - Course Outline

LIB 101: Fundamentals of Library Research

Course Outline Spring 2007

Instructor:	Jan Coe	**Library Office Phone:**	(562) 908-3417
Email:	jcoe@riohondo.edu	**My Phone:**	(562) 692-0921 x**4109**

This page was last updated on:

Week	Topic	Week of:
1	**Information Competency Pre-Test** **Student Information Survey**	Jan. 29 – Feb.4
2	**1 - Structure of the Information Environment** Flow of information Primary & secondary sources	Feb. 5 – Feb. 11
3	**2 -Identifying and Managing a Research Topic** Choosing a topic Broadening & narrowing	Feb. 12 – Feb. 18
4	**3 - Characteristics of Tools for Research** Online databases Catalogs	Feb. 19 – Feb. 25
5	**4 - More Tools for Research** Search engines Web (subject) directories	Feb. 26 – Mar. 4
6	**5 - Strategies for Structuring a Search** Keyword vs. subject terms Controlled vocabulary Boolean operators *Mid-term Exam*	Mar. 5 – Mar. 11
7	**6 - Introduction to the Research Brief & the wiki** How to use the wiki Brainstorming for a topic on the wiki Preparing to choose a manageable topic for your Research Brief	wikispaces Mar. 12 – Mar. 18
8	**7 - Searching catalogs** WebCat subject searching WorldCat	Mar. 19 – Mar. 25
9	Mar. 26 – Apr. 1 Spring Break	
10	**8 - Searching online databases** Search fields Search strategies	Apr. 2 – Apr. 8
11	**9 - Searching "on the Internet"** Knowing when to use a search engine Knowing when a subject directory is preferable	Apr. 9 – Apr. 15
12	**10 - Evaluating Sources** Criteria to apply Does it all add up?	Apr. 16 – Apr. 22
13	**11 - Citing Sources** MLA and APA Print and electronic	Apr. 22 – Apr. 29
14	**12 - Plagiarism** Why it is wrong Techniques to use to avoid plagiarizing	Apr. 30 – May 6
15	**13 - Copyright and Intellectual property** Copyright basics Review Quiz (ungraded)	May 7 – May - 13
16	**14- Review Week** - no assignments **Research Brief due** ***Final Exam***	May 14 – May 20
17	**Information Competency Post-Test** **Course Critique**	May 21 – May 24

Appendix C

Library 101 - Research Brief Project

LIB 101: Fundamentals of Library Research

What is the Research Brief Project?

Instructor:	Jan Coe	**Library Office Phone:**	(562) 908-3417
Email:	jcoe@riohondo.edu	**My Phone:**	(562) 692-0921 x**4109**

This page was last updated on:

The Research Brief Project - Description & Preliminary Instructions

A research brief is **a guide to information on a topic**, similar to the Rio Hondo College Library Subject Guides, but with more breadth and depth. You will select your topic from ideas presented in a rich series of articles that were published in the Los Angeles Times in July, 2006. Reading and thinking about the series - *Altered Oceans* - will prompt many compelling topics that could run the gamut from pollution to wildlife conservation, from government regulations to environmental consequences of human activities, among others. The goal of the research brief is to provide a compact guide to qualitative **sources** that students could actually use (or you yourself might use) for a college-level research paper.

Completing the Research Brief will demonstrate that you can conduct thoughtful research by: a) formulating a workable topic; b) creating appropriate search strategies that include recommended search terms ; c) selecting qualitative sources of information from reference works, books, online databases and Internet web sites; d) evaluating all sources; e) creating MLA citations for your sources; f) summarizing each resource with a brief annotation. For this project you must include:

1. **Title** of the Research Brief.
2. **Topic statement** - defining the scope of your Research Brief.
3. Possible **research questions** pertaining to the topic, suggesting various perspectives a researcher might explore (if applicable).
4. **Reference works** (print or online) containing a general introduction and/or substantive information on the topic (at least 2 sources).
5. **Subject headings** to use for finding information on the topic (at least 4 subject headings).
6. Relevant **books** related to the topic from the Rio Hondo College Library catalog, or another online catalog (at least 3 books).
7. **Online databases** that are appropriate for the topic (at least 2 databases).
8. Relevant **articles** from these databases (at least 3 articles, at least one of which is from a scholarly journal).
9. **Search engines** to use for researching the topic (at least 2 search engines).
10. Examples of **search strategies** to use in the search engines (at least 3 strategies).
11. Relevant **web sites** you found using the search strategies above (at least 3 web sites).
12. Optional (but recommended): 1 **government document** and 1 **statistical source** pertaining to the topic.

Appendix D

Library 101 - Sample Unit of Work - Key Concepts

LIB 101: Fundamentals of Library Research

Unit 10 - Evaluating Sources

Key Concepts

This page was last updated on:

- Evaluating information is hardly a new facet of scholarship but it has become more important with respect to information found on the Internet . It should be apparent that - in addition to scholarly resources from many reputable associations, organizations, and government departments - some web pages are self-authored, put up by strident advocacy groups or individuals with a particular axe to grind. The usual editorial process found in book and periodical literature is not followed because there IS no editorial process for publishing material on the Web.

- The extreme variability of the information found on the Internet is one of its greatest weaknesses as well as one of its greatest strengths. It is a democratizing institution; anyone can put up their thoughts, opinions, evidence for their point of view on an issue. There is no peer-review process, no denial of publication. What that means to you, the student, is that you need to conduct your own review of web pages.

- Dubious information from web sites has become both easier and harder to detect. It is easier to find the gross imposters such as spoof sites and urban legends. It can be more difficult to spot suspect information if it is concealed within an expensively designed, professional-looking web site.

- To assist you in reviewing information from the Internet, librarians and scholars have developed sets of criteria that can be applied to determine whether a web page meets the accepted standard for a reputable source. Relying completely on the so-called "checklist" approach to evaluation has been challenged, however. This Unit introduces you to the debate about web site evaluation tools and encourages you to try both evaluation approaches.

What's Next?

Click on green arrow upper left to go to **Readings**

Appendix E

Library 101 - Sample Unit of Work - Readings

LIB 101: Fundamentals of Library Research

Unit 10 - Evaluating Sources

Readings

This page was last updated on:

1. Read Chapter 6, pages 109-115 in the Carla List-Handley text.

2. Read Re-Evaluating Web Evaluation
   Greg R Notess. *Online*. Jan/Feb 2006. Vol. 30, Iss. 1; p. 45 (3 pages).

3. Read Chucking the Checklist: A Contextual Approach to Teaching Undergraduates Web-Site Evaluation.
   Marc Meola. *portal: Libraries and the Academy*. 2004. Vol.4, No. 3; pp. 331-344 (14 pages).

What's Next?

Click on the green arrow above to go to **Unit 10 Assignment**

Appendix F

Library 101 - Sample Unit of Work - Assignment

Unit 10 - Evaluating Sources

Unit# 10 Assignment

print this page

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1. Here are four different web sites that deal with the issue of mercury in seafood.

Pair A	Pair B
Study Finds No Health Risks for Above-Average Mercury Levels	Got Mercury?
What You Need to Know about Mercury in Fish and Shellfish	CNN: Seafood benefits outweigh risks, government says

Choose either Pair A or Pair B. Use this checklist to evaluate the information from each web site in the Pair.

2. Now you will use the **contextual** framework described in the Meola article you just read. Meola advocates using information *external* to the Web page itself and he gives reasons why *comparison* and *corroboration* can be valuable in evaluating web sites.

   Write several paragraphs describing how you used comparison and corroboration to evaluate the article from the Heartland Institute, or alternatively, the article from the EPA. (You may wish to use a search engine to find additional web sites against which to evaluate either web site, or suggest a "reviewed resource" you would recommend instead of either of the two web sites).

---

3. **Submit** one **article** from an online database that you might use for your Research Brief. Send it to me in a WebCT email.

How to complete these activities :

From the Course Menu, go to **Assignments**. Scroll down to **Unit 10 Assignment**. Click on the file and download it to your computer. It should open in WORD. Complete the **checklist** for the two web sites you chose. Go to the next page of the document and type in your answer to #2. Save the file with the name: **Unit10Assignment_FirstnameLastname**.

Now **upload** your file to WebCT and **submit** it for grading.

Appendix G

Rationale for Activities and Assignments

LIB 101: Fundamentals of Library Research

Rationale for Activities and Assignments

Unit 1 - Structure of the information environment

- The content of the unit is based on Course Objective A in the syllabus (ACRL Std. I.2.a,b,d,e).
- **Why is this important?** Students need to understand that the context in which information is produced and disseminated is not neutral. Additionally, knowing about the "information cycle" is important so that their expectations about resources are in sync with the way the publishing cycle works.
- The point of the exercise is to jolt students out of their normal, every day experience and put them in the position of having to create a system - constructing an alternate reality will enable them to appreciate just how important organizational systems are (and how much we take them for granted). The unit asks students to reflect on just who is an information producer these days and how do they get their messages out? These two exercises ask students to DO something with the concepts they have learned in this unit.
- ***What worked/what didn't/what should be changed next time:***
  Readings were OK but not all students read them. Exercise on opening their own store or eBay online store seemed to be well received and understood. Most students were able to name at least 3 or 4 different organizational parameters. The web sites were good, but doubtful that all students visited them. Perhaps include several questions to test their recall of the web sites. The "flow of information" or information cycle question had very varying results. Not all students understood how to translate an event into published or broadcast articles, books, reference books, etc. that could occur far after the original event. Some chose popular or ephemeral events like the death of an actress instead of more substantial events. Suggest more "priming" for this question. Also, need to introduce popular vs. scholarly resources in this unit, as well as primary/secondary.

Unit 2 - Identifying and managing a research topic

- The content of the unit is based on Course Objective B in the syllabus (ACRL Std. I.1.b,d).
- **Why is this important?** Learning how to broaden or narrow a research topic is a crucial step in the research process. In addition, a student needs to understand the concept of a 'discipline' and be able to decide into which discipline their topic falls. This approach teaches them that looking for information on a topic is not like looking for a needle in a haystack, but that they can make educated decisions about the scope and focus of their topic when seen within the context of a discipline.
- The exercise gives students a chance to identify when pre-defined topics are too broad or too narrow and also asks them to construct their own idea of what constitutes a manageable topic.
- ***What worked/what didn't/what should be changed next time:***
  The table of 9 topics that were to be marked narrow, broad, or OK was difficult for many students. It was clear that some did not understand the concepts behind what makes a topic narrow or broad - some relied on peripheral words like what, how, why, and took those to mean that it was a simple question. Keep this question, but lead up to it with smaller "chunking" questions. The question that gave a narrow extreme and a broad extreme for the same topic was understood by some, but not all students. Re-word the instructions on this question to make it clearer, and keep it. Questions 2-5 of Carla List-Handley textbook were OK, but gave some students trouble. How important is it for them to know the disciplines into which a subject falls??

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