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Beyond Buzz Words and Skill Sets: The Role of Critical Thinking in Information Literacy

Anne E. Shelley

University of Iowa

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Introduction

The concept of information literacy should go far beyond users' acquisition of banked skills. The competence to execute a keyword search in a specific database, navigate a library catalog, or memorize a certain call number does not indicate users are able to think on their own feet. Users who are truly information literate have the capacities to solve problems, think independently and are able to structure their own research processes once they leave the classroom. Effective, engaging instruction is the vehicle through which users can achieve these sought-after attributes; when they are interacting with information and confronted with options, such guidance prepares users for the process of making the most appropriate decision possible. If users are able to think critically, they will not flounder when confronted with a new or complicated resource, a complex research topic, or a hands-off professor; rather, they will possess an increased awareness of their own thought processes, be able to adapt to unfamiliar situations, and arrive at reasoned decisions. By exploring different definitions and benefits of critical thinking, discussing how librarians can encourage critical thinking in information literacy sessions and examining the impact of these practices on user behavior, this paper will attempt to identify the role of critical thinking in information literacy.

Defining Critical Thinking

Before one can explain how critical thinking can figure into a library's information literacy program, one must attempt to define it. Critical thinking can be defined somewhat differently, however, depending on the context in which it is applied. One concept associated with critical thinking is higher-order thinking. The landmark publication *Taxonomy of Educational Objectives: the Classification of Educational Goals* is a collective achievement of

thirty-four psychologists and educators, yet it is most often attributed to its editor Benjamin Bloom. Although intended by its contributors as a document most applicable to post-secondary education, this publication's concentration on higher-order thinking heavily influenced American public school curricula in the latter half of the twentieth century. Bloom's Taxonomy, as the document is known colloquially, addresses cognitive, affective, and psychomotor domains in learners. This six-tiered approach to achieving higher-order thinking abilities in students at the collegiate level is as follows:

1. Knowledge – the ability to recall specific facts, key terms, and basic principles
2. Comprehension – the ability to state in one's own terms, and to interpret and extrapolate from a set of data
3. Application – the ability to apply principles in novel situations
4. Analysis – the ability to identify assumptions, spot logical errors and to distinguish facts from values
5. Synthesis – the ability to combine extant elements into new forms and patterns, i.e., creativity
6. Evaluation – the ability to judge by internal and external criteria (Bloom, 1956)

Bloom's hierarchical arrangement places the objective of evaluation above any other and far above that of knowledge, the most basic objective in the Taxonomy. Each level of the Taxonomy builds and depends upon the previous levels. Bloom and the authoring committee concluded that by constructing curriculums and assessments in adherence to the framework of the Taxonomy, teachers would elicit, nurture, and enhance higher-order thinking skills in their students (Booker, 2007).

In the context of a classroom, Rudd (2007) believes that critical thinking involves skills that students can best learn through a teacher's effective instructional practices. Drawing heavily on the research of Richard Paul, Director of Research and Professional Development at the Center for Critical Thinking and Chair of the National Council for Excellence in Critical

Thinking, Rudd explores methodologies teachers can use to more easily foster higher-order thinking skills in the classroom. Paul describes critical thinking as "a purposeful form of thinking … in which the thinker imposes standards and criteria on the thinking process" and assigns three sets of attributes to those who think critically: elements of reasoning, traits of reasoning, and reasoning standards (2007, p. 47). Rudd breaks down these attributes, stating that students who possess critical thinking skills have inherent traits that facilitate such skills. Although students may be able to use certain cognitive skills to think critically, they are more effective thinkers if they exhibit such affective dispositions as trust in the process of reasoned inquiry, flexibility in considering alternatives and opinions, and the initiative to become and to remain well-informed.

Ennis (1985) defines critical thinking as "reflective and reasonable thinking that is focused on deciding what to believe or do" (p. 45). He explains that this definition encompasses both creative activities (formulating hypotheses, questions, alternatives, and plans for experiments) and practical activities (making reasoned decisions). Comparing Bloom's definitions and examples of higher-order thinking with his own definition of critical thinking, Ennis argues that the Taxonomy, while useful, lacks guidelines for teachers to assess whether a student has or has not achieved a certain goal. He concedes, however, that many teachers probably believe that the top three levels of Bloom's Taxonomy (analysis, synthesis, and evaluation) are skills in higher-order thinking and, therefore, "if it could provide useful guidance, Bloom's Taxonomy could serve as a conceptualization of higher-order thinking skills" (1985, p. 45). Paul's (1985) research concurs with Ennis's assessment that teachers are often misled in thinking that they need look no further than Bloom's Taxonomy to encourage critical thinking skills in their students.

Ennis (1985) developed his own "Goals for a Critical Thinking/Reasoning Curriculum" with the objective of outlining critical thinking dispositions and abilities. He provides examples of inherent dispositions that are necessary for critical thinking to occur, such as initiative in seeking a clear thesis statement, a willingness to look for alternative solutions, and taking a reasonable position in an argument. Ennis is more structured than Rudd in defining the sets of abilities he feels are necessary to think critically, of which there are four. The first ability, clarification, involves identifying assumptions, analyzing arguments, defining terms, and formulating, asking, and answering questions. A student's effective use of judgment based on observation is an important aspect of basic support, Ennis's second defined ability. Thirdly, inference requires a student to have competencies in both deductive and inductive reasoning and, finally, a student's ability solve problems can be used to decide amongst possible actions to address a problem and, perhaps more importantly, interact effectively and appropriately with others (1985, p. 46).

Benefits of Critical Thinking

Awareness of the benefits of critical thinking is documented before the Common Era, when Socrates developed a method of questioning designed to help students acquire, develop, and retain knowledge through guidance rather than lecture. Paul (2007) differentiates Socratic questioning from other types of questioning, explaining that Socrates' method is "systematic, disciplined, and deep," and that it can be used "to explore complex ideas, to get to the truth of things, to open up issues and problems, to uncover assumptions, to analyze concepts, to distinguish what is known from what is not known, and to follow out logical implications of thought" (2007, p. 36). If these objectives can be accomplished, students can better internalize, analyze, and synthesize information because they will have arrived at an answer through their

own rational thought processes. In addition, studies have shown that there is a direct relationship between self-directed inquiry and increased motivation. This is an indication that students' affective dispositions can be influenced by nurture as well as nature (Pugh, 1999). In a classroom setting, Socratic questioning is most effectively used in developing student thinking so students have the capability of distinguishing what they know from what they do not know or understand. If students are able to ask Socratic questions of themselves and others, they will have acquired powerful thinking tools that can be used in everyday life (Paul, 2007).

Group work incorporated into educational curricula prepares students for the inevitability of collaboration in all aspects of adult life, but specifically in the workplace. The majority of professional positions require people to work together to achieve a common goal, and the success of these alliances often rests upon the affective qualities discussed previously. Many of Rudd's examples of affective dispositions require little explanation as to how an individual in possession of some or all of these virtues might be an asset to society. Several of these examples involve a motivation to seek reason both within oneself and while interacting with others. Such willingness is an essential attribute when two or more individuals are engaged in a discussion. Overall, Rudd emphasizes flexibility, applying the concept to divergent opinions, consideration of options, suspension of judgment, and acknowledging one's own biases and egocentricism. He summarizes the holistic benefits of critical thinking by concluding that "individuals who can think critically are invaluable as employees, leaders and members of society" (2007, p. 49).

Linda Elder (2004), President of the Foundation for Critical Thinking and Executive Director of the Center for Critical Thinking, addresses high school graduates in a letter posted on the Foundation's website. In the letter, she emphasizes the importance of critical thinking beyond the context of school and encourages students to ask themselves "how the content of

[their] college classes relates to issues in [their lives] in a meaningful way." Elder then presents the reader with a scenario in which she is considering purchasing a car. She explores a sequence of clear and focused questions a buyer in this situation might want to ask herself, as well as questions that would follow a less critical and, therefore, less effective path. Elder uses this analogy to drive home the point that by cultivating a deliberate formula of questions, one can consistently arrive at reasoned decisions. She suggests beginning with a clear question and purpose that directly relate to the problem at hand, then proceeding by gathering accurate information that is relevant to the dilemma. Elder then recommends exploring different interpretations of facts and ideas before arriving at a conclusion (Elder, 2004).

Critical Thinking in Information Literacy

Through information literacy, librarians can play a vital role in fostering students' critical thinking abilities and dispositions. In order for librarians to elicit critical thinking in students, however, one's guiding definition of information literacy must support such an objective. Like critical thinking, defining information literacy can be inherently problematic due to varied priorities that can influence one's approach (Elmborg, 2006). The Association of College and Research Libraries, for instance, defines information literacy as "a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (ACRL, 2000). While this definition appears to neglect the affective dispositions Rudd and Ennis have deemed necessary to critical thinking, perhaps the vocabulary used is appropriate in the world of a practitioner. Bloom's six cognitive levels certainly apply: for a user to "recognize" when information is needed requires an analysis of his or her situation, and evaluation, at the top of Bloom's hierarchy, remains a primary objective of

information literacy programs, specifically regarding a user's ability to assess the relevance and authority of a given resource.

Library practitioners may very reasonably speculate as to how critical thinking skills can be taught in a one-shot, or a limited timeframe in which the librarian provides instruction to a class in an isolated, guest capacity. While higher-order thinking is truly achieved over periods of time, librarians can encourage critical thinking in information literacy sessions by strengthening users' awareness of their own affective dispositions in addition to emphasizing practical skills related to critical thinking. Kwon, Onwuegbuzie, and Alexander (2007) have identified a multivariate relationship between users' critical thinking attributes and library anxiety, or the feeling of being lost among students who use an academic library for their research. Their findings indicate that weak critical thinking dispositions can be associated with high levels of library anxiety (2007, p. 275). Three dispositions in particular showed a strong negative association with library anxiety. A user's critical thinking self-confidence can be low if he perceives himself as an inferior library user in comparison with his peers. A user who possesses inquisitiveness, or a desire to be well-informed coupled with a motivation to seek knowledge, often expresses low levels of library anxiety. Finally, if a user lacks systematic thinking skills (organized, attentive, logical, and focused inquiry), he will feel lost when using the library (2007, p. 276). Each of these discoveries is evidence that exercising critical thinking while navigating library resources can greatly influence user behavior.

Implementation

Based on their findings, Kwon, Onwuegbuzie, and Alexander suggest some ways that librarians can strive to enhance students' critical thinking dispositions and, consequently,

empower students during the learning process. One method involves teaching within the framework of an existing conceptual model, such as that supplied by Kuhlthau's (2004) Information Search Process:

> [Kuhlthau's] model … illustrates information users' cognitive, affective, and behavioral developments over time during the entire information search process. Using this model, librarians could teach students that most library users experience the cognitive uncertainty and emotional ups and downs during the research process (2008, p. 276).

Even when presented with a limited timeframe for instruction, librarians can use Kuhlthau's model to help students be more aware of their perceived levels of self-confidence. Another method of promoting affective dispositions in students involves engaging them with information using creative, contextual, and varied classroom activities. Such strategies would ideally involve stimulating students' intellectual curiosity in seeking information, motivating students to exercise systematic thinking, and encouraging students to approach library resources with confidence and a positive attitude. For instance, a student is more likely to be engaged in a session about choosing a research topic if he or she can apply exploratory questions toward an area of interest that could potentially contain a desired topic. Motivation and engagement have a strong correlation with student achievement (Weiler, 2005). If librarians embrace critical thinking dispositions as a crucial component of information literacy sessions, they will be able to help alleviate students' feelings of confusion, uncertainty, and intimidation while using library resources (Kwon, 2007). In addition, the ACRL suggests that courses be structured in such a way that students are encouraged and perhaps expected to engage in active inquiry and problem solving. The Association states that the "framing of a significant question or set of questions, the research or creative exploration to find answers, and the communications skills to convey the results … require information literacy competencies" (ACRL, 2000). With this argument, the

ACRL effectively declares that, ideally, information literacy and critical thinking are one in the same.

Of course, students cannot rely on librarians alone to cultivate critical thinking through information literacy. There must exist a desire on the part of an institution's faculty to integrate critical thinking and information literacy standards into a curriculum. Saunders (2007) states that "in order to integrate information literacy skills appropriately and effectively into the general education curriculum, writers and accreditation organizations point to the importance of collaboration between librarians and teaching faculty" (p. 318). Such partnerships can be most successful when implemented across the curriculum. For example, faculty are more likely to embrace an initiative if it falls within their purview and if it can be applied to already-established course objectives. For many institutions, such collaborative endeavors are easier said than done. Saunders discusses a framework authored by the Middle States Commission on Higher Education, which provides guidelines for successful implementation of an integrated information literacy program. Built upon the ACRL's Information Literacy Competency Standards, the framework supplies corresponding suggestions for each standard. Such suggestions include potential objectives for an assessment plan, instructor responsibility roles, ideal instructional mediums, methods and activities, and professional development opportunities (Saunders, 2007).

Assessment

Once a librarian has determined a suitable methodology for encouraging critical thinking during information literacy sessions, he or she must be able to determine the effectiveness of such an approach. Under similar motivations as Bloom, Rudd, Paul, and Ennis had regarding critical thinking, the ACRL has developed a rubric for assessing a user's level of information literacy.

These Information Literacy Competency Standards for Higher Education are a set of five critical and higher-order thinking competencies possessed by an information literate individual. They include twenty-two performance indicators and outcomes to aid the instructor in determining student progress (ACRL, 2000). Although under review by an ACRL task force at the time of this writing, these standards are currently consulted by both academic libraries and discipline-based organizations across the United States (ACRL, 2007). In addition to the ACRL competency standards, Budd (2008) suggests that there are less structured methods of assessment available. Though originally created to evaluate critical thinking skills, librarians may wish to keep in mind the frameworks developed by Ennis, Bloom, and Rudd, as well as Kuhlthau's work on seeking meaning.

Conclusion

This paper has shown that many and varied definitions of critical thinking and information literacy may exist among researchers and practitioners. However, those from both libraries and broader educational curriculums who are invested in student achievement agree that collaboration is essential to improve students' critical thinking dispositions and abilities. The common goals of faculty and librarians in building students' higher-order thinking skills are evident, yet many institutions fail to merge the necessary resources and expertise into a cohesive strategy. Once a model has been developed or adopted successfully in practice, however, the result of having students making reasoned decisions by asking appropriate questions effectively saves time and resources because then the "problem" is being treated instead of the "symptom." Both librarians and educational practitioners hold equal responsibility in developing cross-curricular strategies to help students better understand not only how to interpret information, but to understand the process of such interpretation.

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