

Faculty Connections: Collaborative Teaching in the Online Environment
Designed to Develop Critical Thinking and Information Literacy
2013 American Educational Studies Association Annual Conference (AESA)
Baltimore, Maryland, November 1, 2013.
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Online learning is the reality of the present and future of higher education. This not only includes online classes for distance learning classes, but also has evolved into college classes that are hybrid courses, and now Massive Open Online Courses (MOOCs). Students in institutions around the world are physically in classes on college campuses, yet they are required to utilize technology like Blackboard to complete their degree programs. Entire programs for graduate and doctoral programs are completely online now. The newest online courses, being MOOCs, create an environment where students can move from the physical classroom of 35-100 students, to having thousands of students in a class from around the world. This evolution has modified and changed the face of education for both students and faculty to analyze online learning, Kuhn's developmental model of critical thinking applied to information literacy.

With all of the changes that education has faced; library instruction, aka., information literacy instruction, has evolved with new challenges and dilemmas; for how we teach students in this environment? Or conversely, how do we get students to critically think about resources if we do not work with the students in a physical classroom? In other words, how do instruction librarians integrate library instruction into a presence in the online environment? The current generation of students in colleges and universities are quite tech savvy as a whole, however, they still struggle with critical thinking and information literacy skills, as outlined over 13 years ago by the Association of College and Research Libraries (ACRL) in 2000. The ACRL standards are:

Determine the extent of information needed. Access the needed information effectively and efficiently. Evaluate information and its sources critically.

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. (ALA, 2000, p.2-3)

It was noted in the 1980s, by Perkins and Salomon, that "...most educators today favor the view that critical thinking skills must be taught in the context of specific subject matter" (Kuhn, 1999, p. 17). This has always, been a realization for librarians; for if a skill in searching for research articles or other resources is successfully develop, there needs to be a contextualized reason for what the students are looking for and a reason behind it. Teaching information literacy or library instruction seems to not have as much value to college students without the component of being specific to the subject that they are studying. Kuhn points out that

...the developing cognitive competencies [she] describes as most relevant to critical thinking are metacognitive—rather than cognitive—competencies. In contrast to first-order cognitive skills that enable one to know about the world, metacognitive skills are second-order *meta-knowing* skills that entail knowing about one's own (and others') knowing. (p. 17)

While Kuhn's developmental stages in critical thinking begin in childhood, they are still applicable in adulthood since most do not reach higher order levels of thinking until well into young adult hood. (Kuhn, 1999, p. 21). Students must go beyond basic cognition, and think about what they are learning to critically evaluate materials. Finding a research resource for a student's paper or project is not as much of a problem due to the large number of access points that the student can turn to. However, it is what the student does with the materials. He or she must go

beyond first order thinking, and critically think about the resources and about the nuances of the questions they are attempting to answer. Only then will the incorporation of the material into their research truly be beneficial to their work.

Kuhn breaks this into three stages of knowing: metastrategic, metacognitive, and epistemological. Metastrategic meta-knowing is focused on strategies for finding relevant information, the “...form of knowing that selects and monitors the strategies that are applied—a manager of the repertory of available strategies” (Kuhn, 1999, 18). Metacognitive knowing sets the frame for new information about an area by looking at related information the person already knows to use as a framework for bringing in new information. Metacognitive knowing also assesses one’s current information base for strengths, weakness and gaps. Kuhn states that “Metacognitive knowing operates on one’s base of declarative knowledge, which also stands to benefit from executive management” (Kuhn 1999, p. 18). Finally, Kuhn talks about epistemological knowing which is what one knows about how he processes information into ways they help the person related to the world more effectively, how we each think we come to know things. In Kuhn’s words “Epistemological knowing has to do with an individuals broader understanding of knowledge of knowing” (Kuhn 1999, p. 18). These levels of knowing play a large role in information literacy, but also causes librarians to have to rethink on how they will instruct in the online environment. It is not as simple as teaching the ACRL standards of information literacy in a classroom setting. Innovative new ways of delivery must come to fruition.

Traditionally, library instruction has been forced to change from the typical instruction techniques towards the use of email or chat with librarians in college courses. An abundance of instantly accessible materials has lead students to have to evaluate research materials more independently than previous generations of students. Now most of what students are coming across are online materials; ebooks, full-text academic journals, and other media have lead students to have to find information based on technology. Librarians therefore, have to deliver instruction to accommodate this material. It should be pointed out that the online information literacy teaching is more complicated because of having to rely on a student's ability to progress through Kuhn's developmental model where they become more capable of evaluating information without having face time with the student to "see" what they are thinking and immediately interact with them personalize one's instruction for each student. Missing are the elements as simple as talking with students about their critical thinking skills on online research and seeing their physical, facial, and nonverbal cues to know if material is finding meaning or "sinking in" versus relying on simply students' written words to provide information and feedback to librarians so that they can assess student progress toward information literacy and critical thinking goals.

Some librarians began their online instruction by simply having basic presence as a go-to reference librarian in a blackboard environment. However, this was not enough. Librarians then turned to live chat, discussion boards, video tutorials, Jing captures, (what are/were those? Might want to explain and YouTube clips. The question remains how do we know if students are critically thinking and

evaluating the sources that they are finding with the librarians assistance or instruction? Kuhn discusses metastrategic form of knowing manages the “procedural knowing”, or rather the “knowing how” (p.18). This is on the forefront relating to information literacy, for the students accumulate the knowledge of how to search for research. However, this “knowing how” does not translate into the student being information literate. Instead, the professor and librarian have to get the student to move to the next point, whether in person or online. Metacognitive meta-knowing functions on ones’ declarative knowledge, “What do I know?” and “How do I know it? (Kuhn 1999, p. 19). The questions must be asked when a student finds information. “Research involving older children, adolescents, and adults suggest that meta-knowing competencies—in contrast to most of the competencies that developmental psychologists study—remain incompletely developed (Kuhn, 1999, 21).

According to Mackey and Jacobson, the traditional role of information literacy is shifting to metaliteracy. This incorporates information literacy, media literacy, digital literacy, visual literacy, cyberliteracy, and information fluency into one overarching literacy, Metaliteracy. Recognizably this will eventually lead students to incorporating their information literacy transitioning into metaliteracy. Along with this, their professors are expecting students to have more information searching skills than the average college student in years past. Professors and librarians therefore, have to collaborate to integrate both information literacy and critical thinking into their online courses. “Metaliteracy promotes critical thinking and collaboration in a digital age, providing a comprehensive framework to

effectively participate in social media and online communities” (Mackey and Jacobson, 2011, p62).

Students begin looking at online materials with metastrategic meta-knowing, therefore approaching information with a basis of what students know and managing how they know it (Kuhn, 199, 21). In other words they approach the new information with basic background knowledge, then applying it to their newfound information display a use of first order of cognition. Critically evaluating materials in a college class dictates that one must progress through metastrategic, to metacognition. This critical evaluation of materials is movement to the second order cognition, “...knowing what ones knows and how one knows it and effectively managing and deploying one’s cognitive resources—are the foundation of the critical thinking skills that we hope to impart to students....” (Kuhn, 1999, p. 21) . This is probably the most common thought process in an online environment for information literacy. Students come to an online course and are able to step through the ACRL Standards: However it is the latter four standards need higher order thinking processes. In effect, the standards that American higher educational institutions use for their library instruction do focus on standards, performance indicators, and outcomes that are supposed to reach higher order thinking and critical thinking.

Epistemological meta-knowing moves into a higher order thought process that many people never reach.

By ensuring that individuals have the intellectual abilities of reasoning and critical thinking, and by helping them construct a framework for learning

how to learn, colleges and universities provide the foundation for continued growth throughout their careers, as well as in their roles as informed citizens and members of communities. (ALA, 2000, p.4)

It is the fact that librarians are teaching online, a way for the students to reach, as stated here, “critical thinking” of the materials that they come across. Although, it should be noted that information literacy instruction is difficult even in person. However, since the generations of students today are becoming more and more comfortable in online learning environments, then it becomes more conceivable for the students to successfully critically evaluate and think about the materials that are presented by their professors and librarians online.

“Each of the three of kinds of meta-knowing that have been examined here—the metacognitive, metastrategic, and epistemological—is central to critical thinking. The development of metacognitive understanding is essential to critical thinking because critical thinking by definition involves reflecting on what is known and how that knowledge is justified” (Kuhn, 1999, p23). Students who are able to know what they think and are able to make justifications are reaching metacognition. It should be stated though that pairing metastrategic skills have strengthened critical thinking and evaluation. Finally, epistemological meta-knowing completes the critical thinking skills, Kuhn declares (1999, p. 23).

In conclusion, one asks, how do students reach the higher order meta-knowing and critical thinking that Kuhn discusses in an online environment? Does the online environment lend itself in some ways to the individual teacher-learner interactions that are key to development of critical thinking skills? The online

environment with professor, librarian, and student does create a connection that is different and can create higher order thinking. Students have more time to respond to questions, interactions can be more thought out, and thought exploration can be done more completely. The students in the online environment cannot hide from answering questions or when faced with challenges, they must work through their thoughts. The connection between students, professors, and librarians, in some ways seems more concrete in thought processes.

Furthermore, is information literacy able to effectively work to apply Kuhn's developmental theory work in this online environment? One can postulate that the reality is that Kuhn's developmental model is possible. It cannot be forgotten that this online environment is the present and future of education. Students are able to learn from each other much more concretely in the online environment. One can say this because of the fact that they have the ability to discuss virtually with anyone in this online environment. Therefore, by pondering a professor's question, librarians' input, and their classmate's responses, produces an environment in which learning and critical thinking are higher quality. Whether students progress with their critical evaluations of materials that they find, metastrategically, metacognitively, or epistemologically is key. Not all students will reach the final stage, but the progression of critical thinking will always be working. It depends on the students' mastery of these stages to determine their ability to becoming both information literate and critical thinkers. Some might say that the reality is that these skills are the responsibility of the student, professor, and librarian.

Works Cited

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