

RE-ARCHITECTING AN INFORMATION/TECHNOLOGY LITERACY COURSE: BREAKING NEW GROUND AND LAYING FOUNDATIONAL PEDAGOGIES

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PART I: **Re-architecting an Information Literacy Course**

INTRODUCTION

In the late 1990's, grants and support from the National Science Foundation and the National Research Council impelled many institutions of higher education to consider course redesign. The science mega-classes, usually introductory courses, were targeted for re-visioning of pedagogical approaches, toward a more active learning model. This meant (a) more faculty-student interaction, (b) greater student classroom interaction in mastering new discipline knowledge in a social constructivist environment, and (c) continuous formative and summative assessments to increase student engagement and understanding of material.

From 1999 to 2004, The Pew Charitable Trusts awarded \$8.8 million in grants to 30 institutions for redesigning large introductory courses. These monies were distributed through the National Center for Academic Transformation (NCAT), whose director, Dr. Carol A. Twigg, formulated the various institutions' redesigns into five distinct models: supplemental, replacement/hybrid, emporium, fully online, and buffet. Twigg worked with diverse two- and four-year colleges to prove "that it is possible to improve quality and reduce cost in higher education. Course redesign using information technology is key to achieving both outcomes" (National Center for Academic Transformation, 2008a). Because the class is a microcosm of a course, the models discussed here can be used for either a whole course or a library instruction session.

WHY REDESIGN THE INFORMATION LITERACY CURRICULUM?

Many librarians have noted anecdotally that important

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research and critical thinking skills and concepts learned in the first and second years of college are not retained long enough for use in students' senior capstone projects. One of the reasons for this is that students have difficulty taking their disciplinary learning concepts out of a specific classroom. For example, they don't seem to make the connection between finding "scholarly information" for a university class and finding "trustworthy" real-world information later on, when trying to obtain the cheapest home mortgage. Explicit learning transfer pedagogies can offer students enhanced, longer retained and more easily applied learning experiences. A course or class structural redesign can provide quality individual face-to-face (f2f) time with librarians who can help students make their learning "visible." Time can also be built in for lab sessions with TAs for help at a nuts-and-bolts level. If information literacy instruction session requests exceed workload capability in your library, a redesign that includes online learning modules can alleviate the crunch and reduce costs as well.

REDESIGN MODELS

Supplemental Redesign Model

This model retains the exact course structure (number of meetings and time duration) and supplements class lectures or textbooks with online modular learning activities that take place outside of the classroom. Not only do students come to class better prepared, but they engage more with classroom activities. A pedagogy useful in this model is to introduce students to a new IL concept, say, scholarly/popular or primary/secondary literature, as online readings with built-in assessments. These assessments could be as simple as asking students to identify several articles as scholarly/popular, or primary/secondary. The librarian can then check the assessments and plan a mini-lecture, class activities and drill exercises that teach to the students' weak points of understanding.

Putting appropriate activities online not only makes

students take responsibility for their own learning, but also leaves face-to-face class time for active, higher-level learning activities. Built-in assessments ensure that students complete the assignments and also offer classroom planning opportunities for librarians. In-class time could be spent, for example, with a mini-lecture (10—15 minutes) introducing a new IL concept, interspersed with a quick “think pair share” activity, where a question from the assignment or the mini-lecture is posed. Students reflect individually on an answer for one minute, then turn to their neighbor and discuss each of their answers for two minutes, and then some partners will report out. This is an effective exercise that takes less than approximately 10 minutes for a class of 30 to 40 students. As an aside, taking students out of their regular seating arrangements creates a bit of tension that is effective in improving their engagement in learning. A new seating arrangement means that students must discuss the answers with a relative stranger. This “share” portion of the exercise is also good training for after-college workplaces, where collaboration is becoming the predominant method of getting things done.

Replacement/Hybrid Model

This model reduces some of the classroom meetings and replaces them with online, interactive learning modules. In this model, in-class meetings can take on a significantly different form. An out-of-class activity might include the introduction, via a brief podcast or streamed lecture, of a new IL concept. Then students form three-person groups that write three insights about this concept and one question from the mini-lecture. Some of these questions can be discussed in class, while the rest can be saved for quizzes. Another great Replacement Model IL activity is to present students with several refined topics, that is, those complex enough to contain at least three main concepts. (For example, the main concepts in the topic “the effects of water pollution on the salmon population” are water, pollution and salmon.) Students must find a certain number of articles on this topic. They then submit in writing, the citation, abstract, and location in which the article was found. Afterwards, the librarian can ask them to identify the most difficult part of the assignment, and either assign them a tutorial relating to the problem area, or discuss it in class. The librarian can then work with the discipline faculty member to have this writing assignment graded, if possible.

Emporium Model

All classroom meetings in this model are replaced with a 24/7 learning center that provides personalized learning assistance. This center would be staffed by TAs, other trained staff, librarians (perhaps holding office hours), and/or peer tutors. Personal guidance would be enhanced with online tutorials, drill exercises, quizzes and tests. If this is a credit-bearing class, costs are further contained by using appropriate staffing in the labs, with faculty teaching only the face-to-face portions of the course. Assigning staff for the labs frees up faculty time, thereby allowing the latter to handle larger classes with only a shift, rather than an addition, to their workloads. The center and its staff can be used by other courses as well, further reducing costs. If there is an existing

computer lab on campus, librarians might offer office hours there, or arrange to have peer tutors on hand at strategic times: for example, after the introduction of a new IL skill or concept. Attendance at the center is mandatory, unless a student takes an assessment proving competence in the featured unit/concept/skill. This model has the expense of keeping open a learning center 24/7, or, at least, longer hours than the library’s. Obviously this is a heavily modularized model, which has the benefit of face-to-face help at the point of need.

Online Model

This is a familiar learning experience across the disciplines, including information literacy instruction. All face-to-face learning is moved online, “using Web-based, multi-media resources, commercial software, automatically evaluated assessments with guided feedback and alternative staffing models” (National Center for Academic Transformation, 2008b). This model could use any online component of the other models discussed. An excellent example of an interactive online IL tutorial is San Francisco State’s OASIS (Online Advancement of Student Information Skills) at <http://oasis.sfsu.edu/>. OASIS can be taken up to six times in order to pass—in itself a great learning pedagogy!

Buffet Model

This model provides a tailor-made learning experience for each student, who is evaluated on learning style, study skills and academic or professional goals. This information is then converted into an individualized learning “map,” which the student signs as a contract. Paths to meet the course outcomes are offered in varied pedagogical modalities, face-to-face in lectures, podcasts, labs and online learning modules. Students may choose the modalities and the path, but must complete all outcomes. The learning modalities that are not as popular can be eliminated. This model uses the online modular structure, with the individualized plan being the main difference. Applied to IL instruction, the learning map can be used as a metaphor for the class or course, with locations (outcomes) that must be visited. This is especially engaging for first-year students. If an IL course has a high failure rate, or students repeatedly fail to meet certain IL outcomes, the contract can be spread over two semesters, with students getting extra help either in person, and/or through online drills or exercises. This model also lends itself to librarians’ having office hours and teaching fewer classroom IL instruction sessions. With the use of student contracts, libraries are able to determine in advance how to deploy their resources.

The National Center for Academic Transformation website (<http://www.center.rpi.edu/index.html>) is a one-stop shop for learning more about course or class redesign models, and for finding examples of universities that have used each model. The site also contains articles and guides for librarians who are redesigning their courses or class sessions.

PART II: Laying Foundational Pedagogies

INTRODUCTION

The pedagogical concept put forth by the National Research Council and the National Science Foundation in the late 1990s is that students should be taught to connect abstract ideas within their discipline to real, identifiable problems in the discipline and then later, beyond the discipline, to their own lives. The transfer of existing knowledge to new situations involves higher-level cognitive skills than memorization of material. For students to learn knowledge transfer requires a more active, student-centered pedagogical approach than the uninterrupted lecture model. All librarians teaching information literacy skills share the goals of teaching students to apply these skills toward enriching their lives. We want our students to be critical thinkers, able to apply what they already know as a foundation for learning new material, and then transfer their recently mastered knowledge to different, higher-level problems.

Teaching librarians, whether in one-shot sessions or in credit-bearing courses, can take advantage of the active pedagogical methods found in abundance in the science literature. Consider that active teaching in a 300-student psychology class has some of the same constraints as one-shot library instruction: the need for efficient classroom management techniques that minimize housekeeping during class time; enough time for engaged individual and social learning and then reporting out; and formalized opportunities to evaluate students' processing of class content. Some of the same challenges inherent in large classes also appear in one-shot IL instruction, such as precious class time spent explaining unclear, imprecise written or online instructions, or the lack of time to develop a rapport with students as individuals. With these similarities in mind, the bibliography of active, mass-class science pedagogies can also be useful in teaching information literacy skills.

In each of the redesign models above, modularization is an enhancement to learning. Students can repeat learning modules, pace themselves, reflect on difficult concepts, and complete the modules at their convenience. As part of our Tech/Info Literacy class redesign, the CSU Monterey Bay Library is currently collecting links to tutorials on our del.icio.us page, available at <http://delicious/CST101Redesign/tutorials>.

STUDENT-CENTERED INFORMATION LITERACY EXERCISES

The exercises below have been taken from the sciences and education literature and modified to deliver information literacy outcomes. Student-centered, active learning exercises will take longer to complete, because more of a cognitive load is placed on the students, and less of a teaching load is placed on the librarian. For example, in the first exercise below, the librarian gives no demonstration preceding the exercise, leaving students to have an authentic learning experience, which takes more time than an experience of repeating what the librarian has just shown them. Another reason active learning exercises take a bit longer is that students have to explain what they've learned by reporting

out. If you have a 50-minute session, take 15 minutes out and use that time to conduct two, 5 minute exercises with 5 minutes for reporting. When teaching actively, you may *cover* less, but you are *teaching* more. *Do you teach more than three information literacy concepts in one session?*

AND

Give groups of three to five students an unusual, engaging refined research topic having two or three main concepts. Some examples are: the health risks and treatment of leprosy today; cockroaches and asthma; internet sports gambling by male college students. Then, ask them to find an article on the topic. Don't demonstrate database use, just tell them which specific database to use. Give them five or so minutes and allow them to muddle through, collaboratively learning what happens when another concept term is added to the search. Then ask students to report out what AND does in a search.

OR

Demonstrate a search that you know will yield no results. Yes, this is evil. At this writing, an EBSCO Academic Search Elite search for "preventing religious hate crimes" is just such a search. Students are amazed to think that a librarian can make a mistake, so this really gets their attention. Now is a good time to LISTEN to them problem-solve about how to expand the search. Observe the 30 seconds of silence rule: Students aren't accustomed to a soundless classroom, so they will try to fill it. Discuss synonyms, different forms of a word, truncation, etc.

Applying existing knowledge to new situation

Ask students how they could make use of the following evaluation criteria in their "real" lives: Scholarly sources; bias; and distinguishing between primary and secondary sources might be good examples. Explaining to the class not only solidifies a student's transfer skill, but also peer teaches their colleagues. You might also ask students to bring in video clips about a current news story for this discussion, and offer extra credit if they download it to their cell phone (from news.bbc.co.uk; pbs.org. cnn.com, or another news venue).

A Pop Task

Occasionally assign a task and give the students anywhere from 30 seconds to five minutes to come up with a response. Some examples of tasks are a flowchart of the research process or of scholarly communication, or a mind-map of student's general research topic, containing questions to ask about the topic, possible search terms, known information, people involved in topic, perspectives, etc.

Find the Primary Source

Find one or two of the original studies referred to in a news article. I use Knickerbocker, B. (1999, January 7). "For

many teens, gambling starts at home. First it's a scratch of a Lotto ticket. Eventually, it could be stealing to support an addiction." *Christian Science Monitor*; p. 3, but there are many other news stories that mention "a recent study," without giving the reader further information about the source. Having students piece together the statements in the article and use other, more detailed, scholarly sources to track down the name and origin of a study or poll gives them the authentic learning experience of uncovering the meaning of "primary source."

Pre- and Post-Assessments

It is extremely helpful to go into a class with pre-assessment results. They provide a launching pad for what to teach. Doing a post-assessment about a month after your session on what you covered in class will give you an idea of what concepts students were or were not able to retain. The practice of post-assessing can also help in evaluating your IL instructional pedagogies.

BIBLIOGRAPHY

Allen, D. & Tanner, K. (2005). Infusing active learning into large-enrollment class: seven strategies, from simple to complex. *Cell Biology Education*, 4, 262—268.

Biggs, J. (2003) "Enriching large-class teaching," in J. Biggs (ed.), *Teaching for Quality Learning at University*, Open University Press, McGraw-Hill Education, Berkshire, England, pp. 99—114.

Birks, J. and Hunt, F. (2003). *Hands-on Information Literacy Activities*. New York: Neal-Schuman Publishers.

Chalmers, M. (2008). Lessons from the academy: actuating active mass-class information literacy instruction. *Reference Services Review*, 36 (1), 23—38.

Doshi, A. (2008). How gaming could improve information literacy. *Information Today, Inc.* (April 8). Retrieved April 21, 2008 from <http://www.infotoday.com/cilmag/may06/Doshi.shtml>

Ebert-May, D. & Brewster, C. (1997). Innovation in large lectures—teaching for active learning. *Bioscience*, 47(9), 601—608.

MacCarthy, J. P. & Anderson, L. (2000). "Active learning techniques versus traditional teaching styles: two experiments from history and political science," *Innovative Higher Education*, 24(4), 279—291.

National Center for Academic Transformation (2008a). "Who we are." Retrieved September 12, 2008 from <http://www.center.rpi.edu/whoweare.html>.

National Center for Academic Transformation (2008b). "The fully online model." Retrieved September 12, 2008 from

http://www.center.rpi.edu/PlanRes/R2R_Model_Online.htm.

Smith, K.A. (2000). Going deeper: formal small group learning in large classes. In J. MacGregor, J. L. Cooper, K.A. Smith & P. Robinson (Eds.), *Strategies for Energizing Large Classes: From Small Groups to Learning Communities* (pp. 25-46). San Francisco: Jossey-Bass.