

# ROBUST (AND BACKWARD) INSTRUCTIONAL DESIGN FOR AN ONLINE INFORMATION LITERACY COURSE

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## INTRODUCTION

The Ohio State University (OSU) conversion to a semester system necessitated a revision to at least one online course offered by the libraries. Three members of the Teaching & Learning unit formed a team to tackle this project in August 2011. In preparation for the project, one team member participated in a Course Design Institute offered by the University Center for the Advancement of Teaching (UCAT) in the same month. The member also consulted with the Center for the Study and Teaching of Writing, the Digital Union (a Learning Technology support unit), and attended other campus events that addressed teaching and learning.

After initial preparations, the team selected course design frameworks and agreed on pedagogical philosophies to drive project decisions; but from an early stage, they realized that course design is, as Jonassen (1997) asserts, an “ill-structured” and creative activity. Each exercise in Backward Design or bullet points in the Quality Matters rubric could be frustrating to accomplish, and in the end, did not guarantee a cohesive and engaging course. However, they also recognized that there’s no such thing as a perfect course, and it takes iterative efforts to produce a worthwhile course. Also, the course can never truly be a finished product—just a constant work in progress.

Therefore, while this document does provide the core framework of the course and some course materials that can

be adopted, it is not a step-by-step guide and does not include technical specifications or a list of the software used. Instead, it is primarily a discussion of insights made by the team in the process of trying to create the best course possible and to articulate them as general principles that can transfer beyond a local environment.

## HISTORY

Research into student information-seeking behaviors over the last 15 years has confirmed what many librarians have known to be true: students’ ability to effectively search and evaluate information is lacking. In order to address this achievement gap, many librarians have offered or started offering information literacy classes. At OSU, this comes in the form of online courses offered in sequential order and developed by the OSU Libraries’ Teaching & Learning Unit. Arts & Sciences 120: Internet Tools & Research Techniques is a four-week mini-course focused on learning web tools and general search skills. It was created in response to competencies recommended by the faculty Committee on Student Computing Competencies in 1999 and included the following research skills:

- use a Web browser to search for information efficiently,
- learn to use the libraries’ print and online information sources,
- choose appropriate research tools,
- evaluate and choose the best information sources, and
- use key information sources for your major field.

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The original course was centered around net.TUTOR (<http://liblearn.osu.edu/tutor/>), a set of tutorials also created by the libraries in response to the recommendations. It includes interactive lessons on a variety of topics including the use of web browsers, searching for information, and navigating databases. Course activities were primarily comprised of auto-graded comprehension and application quizzes followed by a short-answer “Capstone” assignment administered in the final week of the course. The first offering was in Fall 1999, and since then, it has gone on to enroll thousands of students without any large, systematic changes.

## STUDENTS’ INFORMATION-SEEKING

Since the initial development of the courses, research into students’ information seeking skills has illuminated many areas of opportunity for the course. The Ethnographic Research in Illinois Academic Libraries project shows students are inclined to “satisfice,” or only do as much research as they perceive is adequate to meet their needs (Kolowich, 2011). This potentially creates a perfect storm when coupled with students’ comfort with technology. Today, it is not only generally accepted that most students are able to use a browser or email, but an expectation. However, research on digital natives has found that their abilities might be exaggerated and the term “native” is potentially misleading (Thomas, 2011). While students may have grown up with technology, their ability to effectively search for information leaves much to be desired despite their high self-efficacy. Students tend to give up easily on search engines like Google when a solution does not present itself immediately in the search results (Kolowich, 2011). Despite this apparent lack of perseverance, Project Information Literacy (PIL) found that their research strategies are actually fairly complex (Head, 2007). They will consult other sources than Google and understand the significance of doing so, but the underlying problem is that students simply do not know about quality research sources or how to navigate them. These issues become even more apparent with the more recent Citation Project which discovered, through its analysis of college papers, that students are further challenged when it comes to properly incorporating sources into their written work (Howard, Rodrigue, & Serviss, 2010). Many of these findings influenced the design of the course both implicitly and explicitly, such as the emphasis on certain topics or the type of assignments developed.

## DESIGN APPROACH

Backward design (Wiggins & McTighe, 1998), as a general framework, was primarily used to develop the new 120 course. Its principles are similar to strategic planning, a common business practice defined by Barry (1998) as “the process of determining what your organization intends to accomplish and how you will direct the organization and its resources toward accomplishing these goals” (p. 33). In a landmark work by Mintzberg (1994), another definition seems to more accurately convey its true purpose: “Planning is a formalized procedure to produce an articulated result, in the form of an integrated system of decisions” (p. 12). It is a method promoted by UCAT

and the OSU Libraries. The backward design process typically involves:

### 1. Establishing Desired Results

Wiggins and McTighe (1999), in the initial phase, call for prioritizing “important ideas worthy of understanding” (p. 22) and filtering them out by asking four questions:

- Is it enduring?
- Does it lie at the heart of the discipline?
- Does it require uncoverage?
- Is it engaging?

Or put alternatively:

- Will it be remembered after the details are forgotten?
- Is it the authentic work of practitioners?
- What needs to be understood for it to be applied?
- Does it offer potential for engagement with students?

The Information Literacy Competency Standards for Higher Education were developed in the 1990s and approved in 2000 by the Association of College & Research Libraries (ACRL). They list standards, performance indicators, and potential outcomes for assessing the information literate individual. OSU does not have a comprehensive list of literacy competencies, and the team endorsed these standards. But because they were not meant to stand alone as a curriculum, they were not easy to adapt.

Example:

#### Standard One

The information literate student determines the nature and extent of the information needed.

#### Performance Indicators

The information literate student defines and articulates the need for information.

#### Outcomes Include

Confers with instructors and participates in class discussions, peer workgroups, and electronic discussions to identify a research topic, or other information need

Develops a thesis statement and formulates questions based on the information need

Explores general information sources to increase familiarity with the topic

Some are vague and require a lot more expansion (or contextualizing) to be useful as a content standard or assessment measure. Some are pedagogical decisions or given behaviors that do not necessarily need to be explicated. Others are obviously content, but only provide a starting point as stated by the ACRL (2000): “These outcomes serve as guidelines for faculty, librarians, and others in developing local methods for measuring student learning in the context of an institution’s unique mission” (p. 6). Similar to the ACRL standards, backward design suggests a three-layer model of determining standards:

#### A. Topical statements (broad subject-area topic)

##### 1. General understandings (what needs to be understood)

##### a. Specific understandings (summarizes topic in detail and suggests ideas for evidence/assessment)

To work with two different frameworks that both rely on contextualization, the designer must make the choice about how to proceed. In this case, it meant extracting ACRL standards that suggested content or learning objectives, examining student information-seeking research, and using prior content from the old course. The team took a two-layer approach, and over the course of several months, course goals (things students would know or care about) and objectives (measurable student outcomes) were iteratively developed. It was important to complete this task but also to realize that it is an evolving document, not a static mandate. For the team’s project, both are continually under development as new insights are made. Recent course goals and objectives can be found in APPENDIX A.

## 2. Determine Acceptable Evidence

This was one of the most difficult tasks for the team, and Wiggins and McTighe (1999) themselves express how unnatural this process can be (p. 65). It asks the designer to think about what type of activities demonstrate understanding without nailing down the content first, and this requires the designer to critically think about the nature of learning itself. Typically, one would instinctually start from a core text and go straight into designing an assessment activity based on those texts (e.g., comprehension quizzes). The process asks designers to think about quizzes as just a category of assessment, i.e., does taking a multiple-choice quiz qualify as evidence that the student comprehends the text?

Bloom’s Revised Taxonomy mapped out lower- to higher-order thinking categories that roughly mirror a learner’s cognitive development along with action verbs that demonstrate performance in those categories. For instance, *creation* is considered a higher-order activity, and verbs associated with it are *designing* and *constructing*. This was the model adopted by the team to ensure a diversity of activities. Higher-order thinking activities (i.e. journaling) were considered as greater evidence of a student’s achievement of course objectives (i.e.

articulating the bias of a news source).

The initial temptation was to shoot for high level activities, and while it might be possible to do so, not every topic needs to be (or can practically be) “pondered and understood in terms of underlying principles or philosophy” (Williams & McTighe, 1999, p. 24) in order to reach the goals of the class—unless those are indeed the goals of the class.

Several constraints would also impact course activities:

- It is online and asynchronous
- It is taught by several course instructors with varying responsibilities and time commitments
- The learning management system has a limited set of features (but affords unique tasks as well)

Keeping these in mind, the team kept the auto-graded, multiple-choice quizzes and task-based worksheets as components, as well as the concept of a capstone as a culminating project for the course. Short written assignments were added to assess, scaffold, and reinforce skills such as Boolean searching and meta-analysis of information sources. These written activities were a significant inclusion and were designed to assess whether or not students truly understand the syntax they were asked to process. In the old course, students would be asked to report their search statement and the number of results that were produced, and their answers provided little insight into their thinking. Discussion board activities were also integrated into the course to add collaborative learning. Finally, the capstone project evolved from a short-answer assignment to a cumulative activity threaded throughout the course. It provides an authentic, engaging, and challenging task that encompasses the goals of the course. It also provides a reference point for designing activities needed to support the completion of the project.

## 3. Plan Learning Experiences and Instruction

This final phase in the backward design framework calls for deciding how to put everything together. This was accomplished by sequencing the course activities and (re)arranging of the order of the goals and objectives. This was a key task that the team completed as a group. It allowed them to create a basic narrative of the course. What would occur in Week 1? Which goals did those activities align with? But there was not necessarily a one-to-one relationship with each week and objective; some objectives were integrated throughout the course. Aside from this narrative, the process also included finalizing logistics such as class sizes and grading (which is another significant design component, but discussion is omitted in this paper).

Reaching this stage also allowed the team to turn their attention toward fully developing content and activities. These tasks were actually interwoven with the design of assessment and even in the development of objectives. But it was a non-linear process as the nature of the content was repeatedly

negotiated throughout the development of the course. Also, in online environments, the distinction between lecture, texts, and tasks becomes artificial when everything is outputted to students in web form—but strict adherence to backward design is not mandatory. See APPENDIX B for a draft schedule the team created based on the first two phases and adopted from UCAT.

## ONLINE PEDAGOGIES

The *Quality Matters* rubric was also used as a checklist. It is part of a program that labels itself a “faculty-centered, peer-review process that is designed to certify the quality of online and blended course” (MarylandOnline, 2010). The rubric is freely available online. Many elements overlap with the design framework in terms of ensuring that activities support learning goals, but the checklist was a useful reminder or helped address certain areas that may have been overlooked, such as making sure students introduced themselves to the class or communicating to students when they should expect feedback. The rubric also expresses the need for interaction in the course, and the facilitation of active learning through student-to-student engagement was and continues to be a priority for the team. They hope to take the course through the formal process.

## CONCLUSION

There were many influences in the process of designing the course, and this document is nowhere near exhaustive. There are other considerations that were omitted, such as how one communicates expectations for the course or how to create good rubrics. Robust instructional design for information literacy courses starts with best practices and established frameworks, but requires creativity and willingness to change when confronted with new information. The type of activities and the approach to teaching the courses not only demanded design frameworks to help guide the process, but also challenged underlying beliefs and values about learning and information literacy—as well as the role of the library in teaching these things.

Some library instructors have developed classes that seem to mirror English composition courses in which annotated bibliographies or some sort of rhetorical analysis is a required component (Hensley, 2006; Wheeler, Villardita, & Kindschi, 2010). The goal of this team was not to try to improve or create a resource-focused version of a class that already exists outside of the library, but to address researched and documented information-related needs that aren’t sufficiently taught in the curriculum or by any specific discipline. But based on their course design experiences, it is the belief of the team that whatever the goals are, those design decisions should be flexible and revisited frequently.

This course is slated to be taught for the first time in Fall 2012. The team plans to report back on the results of the course design in 2013.

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## APPENDIX A

### 1) Students will understand the basic cycle and organization of Information

- a) Students describe the ecology of information given an event
- b) Students articulate the basics of how information is effectively formally and informally organized (e.g. bookmarking, tags, hierarchies, maps)
- c) Students communicate current issues related to the access of information
- d) Students provide examples of how the context of any given piece of information can impact its interpretation

### 2) Students will differentiate information types

- a) Students identify the value and differences of potential resources in a variety of formats (e.g., multimedia, database, website, data set, audio/visual, book)
- b) Students identify the purpose and audience of potential resources (e.g. popular vs. scholarly, current vs. historical)
- c) Students differentiate between primary and secondary sources, recognizing how their use and importance vary with each discipline

### 3) Students will critically evaluate information sources

- a) Students are able to parse and critically summarize information from various sources for reliability, validity, accuracy, authority, timeliness, and point of view or bias
- b) Students recognize prejudice, deception, or manipulation
- c) Students use consciously selected criteria to determine whether the information contradicts or verifies information used from other sources
- d) Students determine probable accuracy by questioning the source of the data, the limitations of the information gathering tools or strategies, and the reasonableness of the conclusions
- e) Students select information that provides evidence for a topic

### 4) Students will strategically formulate research questions

- a) Students use an existing class assignment (if applicable) or something from one's life to define and identify information needs
- b) Students refine and further develop information needs as he or she becomes more familiar with a topic

### 5) Students will use and critically evaluate multiple search strategies

- a) Students understand basics of search engines (e.g. basic functions, aggregation, and PageRank)
- b) Students learn to construct a search (e.g. Boolean, thesauri, subject headings)
- c) Students review search strategies and incorporate additional concepts as necessary
- d) Students understand and critically evaluate scope of information sources

### 6) Students will use and manage information

- a) Students consciously select or develop a system for organizing information and citations (e.g. Evernote, thoughtful hierarchy, concept maps)
- b) Student identifies and differentiates between bibliographic elements for a wide range of resources
- c) Students are able to track all pertinent citation information for future reference

## APPENDIX B

W	Content	Instruction	Activity	Objective(s)
	1 <sup>st</sup> Half of Course	<b>HOW TO CONSUME INFORMATION</b>		
1	<b>Course Overview &amp; Self-Efficacy; Information Cycle and Organization</b>	<p><b>Preliminary</b> Using Carmen Course Responsibilities (email)</p> <p><b>Introduction</b> <a href="#">Did you know? Information Cycle</a>(PSU) <a href="#">Information Cycle</a>(UIUC) <a href="#">What Students Don't Know</a> (Inside Higher Ed) <i>Primary, Secondary, and Tertiary Sources</i> (net.TUTOR)</p>	<ul style="list-style-type: none"> <li>• Multiple Choice Quiz (MCQ) on weekly readings</li> <li>• Reflection on personal information behavior</li> <li>• Discussion Board Task #1</li> </ul>	Familiarity Self-efficacy Self-assessment 2c
2	<b>Information Types and Critical Evaluation (2+3)</b>	<p><b>Online Information Basics</b> <a href="#">Thing 15: URLs</a> (20 Things I Learned About the Web) <a href="#">How Web Pages Work – Setting the Stage</a> (howstuffworks.com) <a href="#">Electronic Sources</a> (Web Publications) (Purdue OWL) <b>Meta Aspects</b> Authority: <a href="#">Identifying reliable sources</a> (Wikipedia) Reliability: <a href="#">Verifiability: Sec. 2 &amp; 3</a> (Wikipedia) Currency: <a href="#">Evaluating Websites: 3C</a> (net.TUTOR)</p>	<ul style="list-style-type: none"> <li>• MCQ on weekly readings</li> <li>• Worksheet on Information Types</li> <li>• Worksheet on Meta Topics</li> <li>• Discussion Board Task #2</li> </ul>	1a, 2a, 2b, 2c, 3a
3	<b>Critical Evaluation (2+3) / Research Questions (strategies part 1)</b>	<p><b>Content Aspects</b> Bias: <a href="#">How to Detect Bias in the News</a> (Media Awareness Network) POV: <a href="#">Neutral Point of View</a> (Wikipedia) Validity: <a href="#">Fallacies</a> (The Writing Center at UNC-Chapel Hill) <b>Data Sources</b></p>	<ul style="list-style-type: none"> <li>• MCQ on weekly readings</li> <li>• Worksheets on logical fallacies</li> <li>• Discussion Board Task #3</li> <li>• Data Sources, Part 1 Worksheet</li> </ul>	3a, 3b, 5c, 5d, 6b, 6c

	2 <sup>nd</sup> Half of Course	HOW TO FIND INFORMATION	
4	<b>Research and Search Strategies</b>	<b>Research Questions</b> <a href="#">Smart Research Strategies</a> (net.TUTOR) <a href="#">What Makes a Primary Source a Primary Source?</a> (Library of Congress) <b>Search Engines</b> <a href="#">Basic search help</a> (Google) <a href="#">Operators and more search help</a> (Google) <i>Keywords</i> (?) Web Search Strategies in Plain English <a href="http://www.commoncraft.com/video/web-search-strategies">http://www.commoncraft.com/video/web-search-strategies</a> <b>Data Sources (continued)</b>	MCQ on weekly readings Research Questions Worksheet Data Sources, Part 2 - Worksheet Searching, Part 1 – Boolean Search Drills Discussion Board Task #4
5	<b>Research Questions and Search Strategies (4+5)</b>	<b>Advanced Search</b> - Advanced Boolean (net.TUTOR)	MCQ on all course readings Searching, Part 2 – Advanced Boolean Drills Discussion Board Task #5 Data Sources, Part 3 - Worksheet
6	<b>Comprehensive Review</b>		Short Answer Test (previously Capstone) Capstone, Part 1 (contains Discussion Board task)
7	<b>Final</b>	<b>“Next Steps”</b> - Scholarship, Specialized Databases, Journals, Peer & Non-Peer review, Trade publications	Capstone, Part 2 (contains Discussion Board task) Capstone Revision Reflection re-visited