

CHAPTER 8

APPROXIMATING THE UNIVERSITY: THE INFORMATION LITERACY PRACTICES OF NOVICE RESEARCHERS

Karen Gocsik

University of California-San Diego

Laura R. Braunstein and Cynthia E. Tobery

Dartmouth College

In a seminal essay, David Bartholomae (1985) asserts that novice writers need to “invent the university by assembling and mimicking its language” (p. 135), noting that they do so by various “successive approximations” of academic conventions and practices:

What our beginning students need to learn is to extend themselves, by successive approximations, into the commonplaces, set phrases, rituals and gestures, habits of mind, tricks of persuasion, obligatory conclusions and necessary connections that . . . constitute knowledge within the various branches of our academic community. (p. 146)

Instructors and librarians who work with beginning academic writers confirm Bartholomae’s assertion. Michelle Simmons (2005) has described how beginning researchers are outsiders to disciplinary discourse, arguing that traditional approaches to information literacy (IL), such as the “one-shot” library instruction session, may put these students at a disadvantage. In Simmons’s view, novice writers need to see research “not as a task of collecting information but instead as a task of constructing meaning” (p. 299). Simmons argues for *critical* IL, which is not merely a matter of acquiring context-independent research skills, but of “learning . . . discursive practices within the context of an academic discipline” (p. 299). Our research asks how, precisely, novice writer-researchers go about inventing the university *before* they have an understanding of the disciplines in which they are asked to work. In other words, through which particular

“successive approximations” do students transform information into meaningful disciplinary knowledge? Our careful coding of a collaborative wiki project across several years suggests that novice writers in the first steps of knowledge construction tend to mimic the *structures* of knowledge, rather than to create coherent *narratives* of understanding. This finding has implications not only for how we understand student learning, but also for how we teach students to find, make sense of, and compose knowledge.

CONTEXT AND AIMS

This particular project situates itself within Rolf Norgaard’s call to “write information literacy”—a call for Writing Studies and IL professionals to co-envision and co-shape the instructional practices of composition and research (2003). While presenting his call, Norgaard identifies two key misconceptions about both writing and IL—first, that IL, like writing, is often viewed as a technical skill that is merely functional or performative; and second, that IL skills, like writing skills, are perceived to be lacking among our incoming students when in fact these students bring rich and complicated practices with them to the university (Norgaard, 2003). As instructors and researchers, we found ourselves preoccupied by these problems. Like other scholars (Fister, 2013; Melzer & Zemliansky, 2003; Fister, 1995) we had long recognized the first-year research paper as a problematic “performance”—not of knowledge but, as Bartholomae suggests, of the *approximation of knowledge*. We also realized that students were drawing from an established variety of research practices by which they were (productively or not) inventing their university (see Biddix et al. 2011; Corbett 2010; Head & Eisenberg, 2009; McClure & Clink, 2009). Informed also by the “think aloud” protocols that had been employed most notably by Linda Flower and John Hayes (1981), we aimed to develop a project that would help us make visible the research and compositional decisions of our novice writers, teasing out their various threads, uncovering what patterns of practice these novices were employing, and then exploring with them how these practices were facilitating or obstructing their learning. Bolstered further by the work that the Council of Writing Program Administrators (WPA) had done in defining its outcomes for first-year composition in 2000 and 2008, and also by the work that the Association of College and Research Libraries (ACRL) had done to develop its IL competency standards (2000), we sought a project that would help us map how our students work to construct knowledge from information—a project that might then assist us in reforming our research and writing instruction from the more traditional product-oriented model to a process model that situated research as both a generative and rhetorical endeavor.

Our aspirations were supported and informed by the particular structures of our institutional environment. While the tensions between the fields of Writing Studies and IL have been well documented (see Ivey, 2103; Meulemans & Carr, 2013; Kotter, 1999; among others), our work benefitted from an institutional “Kairos” (Baker & Gladis; Chapter 16, this collection; Norgaard, 2004) afforded by the fact that our library, our writing program, and our far-reaching teaching and learning center were aligned in their commitment to developing pedagogies that positioned writing as inquiry and research as rhetorical. We had in place the various criteria that Ruth Ivey (2013) acknowledges as central to a working collaboration: shared, commonly defined goals; trust and respect; competent partners; and ongoing, institutionally sustained conversation. Though many classes at our institution still embrace the sort of methods that Norgaard (2003) describes—where research papers are assigned and assessed as products rather than by the processes that informed them, and literacy is measured (at least in part) by how correctly one’s sources are cited—we were able to develop our teaching and research in a climate where Writing Studies and IL colleagues met regularly, both informally and in regular professional development workshops, to discuss how our methods and pedagogies might inform each other. This wiki project—undertaken by a writing instructor, a librarian, and an educational developer from the teaching and learning center—was an outgrowth of these conversations about writing, research, and learning.

THE ASSIGNMENT

The aim of the assignment, given to international students in a first-year developmental writing class, was to chart the successive approximations of disciplinary discourse that novices make as they find, assess, and use information to construct knowledge (see Appendix A). In particular, we were attempting to discern to what degree students search strategically, practice research as inquiry, and appropriately contextualize and construct knowledge—three of the six “threshold concepts” articulated in the *Framework for Information Literacy for Higher Education* (ACRL, 2015). To assess these student practices, we asked the students over the course of a weekend to collaborate on a *Wikipedia*-style article on a subject that they knew little about—in this case, the history of Christianity in Early America. We gave them a reading to get them started, and then instructed them to use any credible source that would help them to build an article (which we refer to, in the assignment, as a “narrative”). We required only that they compose collaboratively, using the wiki tool embedded in the course’s learning management system, and that they list the sources they used in a separate “sources” file.

In line with evolving IL practices (see Artman et al. 2010; Jacobs & Jacobs, 2009; Curzon, 2004), ours was not a “one-shot” assignment; rather, it constituted the inaugural step in the course’s ongoing, sequenced instruction in research and writing. As the first, foundational step in that process, the assignment was also intended as a way that the students, the librarian, and the instructor might be challenged to re-envision and re-articulate the entire research process. Pedagogically, the assignment was challenging, deliberately designed to ask more of students than they would be able to manage. These first-year students, while intelligent, were at the very start of their academic careers and had little awareness of the academic practices through which knowledge is constructed. Moreover, as international students, they were only beginning to familiarize themselves with American history and culture. In this light, the assignment was designed to be an exercise in structured failure—an exercise by which students would confront and then assess the efficacy of the strategies that they use, or don’t use, to construct knowledge. In completing the assignment and undergoing the subsequent debriefing discussion with both the instructor and the course’s embedded librarian, students would begin to develop an understanding of research and writing as recursive processes that mirror and inform each other.

Over the six years that we ran this assignment (2006–2012), we engaged in ongoing, informal assessments of the assignment’s success. As we did, we noted intriguing patterns in the ways that students were constructing knowledge. We ascertained that students were approximating knowledge more than they were constructing it—that is, while students organized information by creating headings and sub-headings so that their discussion *seemed* to cohere (thereby approximating what one might find in an encyclopedia entry), they were unable to construct a coherent, knowledgeable summary of the material at hand. We suspected that the assignment, though too small to enable us to draw definitive conclusions, could offer us a rich source of data that might illuminate how novice writers and researchers shape their understanding of an unfamiliar topic. As we considered the assignments’ results collectively, we found ourselves returning to two important questions:

- What research and composing practices do student writers draw upon when they are engaged in the *very first steps* of knowledge construction?
- How do novices mask inadequacies in their knowledge as they attempt to approximate academic conversations?

To answer these questions, we decided to investigate further the three capabilities that the assignment was designed to assess: selecting and using sources;

assembling knowledge via basic compositional moves; and applying organizational strategies.

METHODS

In order to quantify the patterns and trends we were seeing in these three areas, we developed four distinct systems for coding: we coded for selection of sources, for use of sources, for compositional “moves,” and for organizational strategies. When coding the selection of sources in the sources file, for example, we counted print sources (albeit few) and enumerated the different types of web sources that students chose: namely, *Wikipedia*, online library resources, and commercial, organizational, and personal websites. When coding students’ use of sources in the collaboratively written wiki article, we were inspired by the Citation Project, a multi-year, multi-institution research study that is examining sources and citations in first-year writing (see *What is the Citation Project?* [n.d.]; Howard et al., 2010); by Randall McClure and Kellian Clink’s study of student research practices (2008); and by the work of Barbara Fister (1992) and Cynthia Haller (2010), who employed interviews and speak-aloud protocol in order to conceptualize students’ research processes. Our coding determined whether students were copying material directly from a source, with or without attribution; whether they were paraphrasing source material; or whether they were patchwriting, that is, “reproducing source language with some words deleted or added, some grammatical structures altered, or some synonyms used” (Howard et al., 2010, p. 181). Studies similar to ours—in that they employed coding or other forms of critical analysis to conceptualize novice research practices—are prevalent in this volume, including the work of Scheidt et al., who coded research interviews; Wojahn et al., who coded students’ research journals and reflective essays; and Blackwell-Starnes, who used RAP (Research Aloud Protocol) to determine various elements in a students’ research process, including what role the assignment plays and to what degree the research process focuses on the final product.

When coding for compositional moves, we examined the seven discrete wiki articles, along with all their iterations. The wikis were produced in consecutive fall terms by new classes of 16 first-year composition students; however, we were unable to code the wiki produced in the fall of 2007 due to a malfunction of the course management system. Each wiki went through a number of iterations or drafts, ranging from 66 to 131 in total, with the average number of drafts being 89 (each student therefore averaging 5.5 contributions). In order to code the wikis, we looked at every draft, each of which was saved by the course management system with changes highlighted by the system. As we coded, we compared each saved version of the document to the previous version and noted whether

students were constructing knowledge by adding, deleting, moving, or revising materials. Added materials were then coded more specifically according to type:

- Content appearing in paragraph form
- Content appearing in bullet form
- Headings and subheadings
- Table of contents
- New entries in an existing table of contents
- Transitions
- Quotations/photos/videos

The coding categories were chosen after sections were analyzed by different researchers on the team; notes were then compared to normalize the coding process. The original coding scheme included subcategories for deletions as well, but deletions were so uncommon that all types of deletions were combined into one category during the analysis. All the versions for a given year were coded by the same person.

Finally, when coding students' overall organizational strategies, we noted where students were organizing material via chronology (arranging material roughly by date but without working to create a coherent narrative), classification (arranging material into categories and subcategories), narrative (arranging material into a coherent story), or analysis (arranging material around a claim, supported by evidence).

To better understand the students' attitudes toward their completed work, we developed for our final group of students an anonymous survey which asked them to assess the quality of their work according to the standards that *Wikipedia* uses for feature articles, including whether the article is well-written; focused and relevant; useful; comprehensive; well-researched; of an appropriate length; neutral; and appropriately structured (*Featured Article Criteria*, 2013). We used the students' assessment of their work as a starting point for the debriefing discussion that we held in class.

RESULTS AND INTERPRETATION

FINDING AND USING INFORMATION

The original goal of the wiki assignment was to diagnose students' baseline research skills in order to design library instruction more effectively (see Braunstein, 2009). From 2006, when the project was first assigned, the instructor and the librarian envisioned library research instruction as a collaborative, course-integrated process, anticipating recommendations in the literature of both IL

Table 8.1. Type and frequency of sources cited

Source Type	Number Cited in Sources File, all years combined
Wikipedia	108
Academic (free) website	43
Religious website	41
Government or Nonprofit website	29
Academic resource (paid library subscription)	20
Commercial or business website	14
Print book or ebook	12
Personal website	10

and Writing Studies (see Artman et al., 2010; Barratt et al., 2008; McClure & Clink, 2008, among others). Given that we deliberately did not schedule a library instruction session until after the assignment was completed, we were not surprised to find that students relied on the search tools they knew: Google and Wikipedia. Of more interest to us were the sites the students found and selected to use as sources, as shown in Table 8.1, and their expressed rationale for doing so in our post-assignment discussion. (See Appendix B for examples of the source types. Note that not all material in the document was cited in the source file.)

What concerned us about these sources was not that students overwhelmingly used websites rather than library resources (an outcome we expected), but that they so rarely analyzed the material they found. As McClure and Clink (2008) also found in their study, our students were adept at finding information, but struggled to determine its credibility in terms of authority, bias, and relevance. To address this challenge, students used their own criteria for evaluating a source's credibility. Two examples demonstrate the mixed success of this approach.

First, students from several different classes cited a page from Stanford University's archive of the papers of Martin Luther King, Jr. (Figure 8.1). The item turns out to be a class paper on the Great Awakening that King wrote as a seminarian. When questioned regarding this choice during our debriefing discussion, students replied that they thought any ".edu" website was authoritative, since, to them, it appeared to have been written by a professor. They were unfamiliar with the concept of digital archives and other materials being hosted by an academic institution—or that ".edu" sites could just as likely be authored by students like themselves. This site seemed authoritative to them for another reason: these international students came from countries in which Christianity was by no



Figure 8.1. Martin Luther King, Jr.'s seminary paper. King, Martin Luther, Jr. (1950). *An Appraisal of the Great Awakening*. King Papers Project. The Martin Luther King, Jr. Research and Education Institute, Stanford University.

means a common religious culture. Most had never heard of figures such as Jonathan Edwards, nor were they familiar with Protestant sectarianism in colonial America. But they had heard of Martin Luther King, Jr.

A second example of students using their own criteria to evaluate sources involved the persistent (yearly) appearance of a page from *Theopedia*, on Calvinism (currently the second result in a Google search on “Calvinism”) (Figure 8.2). In the years that we were employing this assignment, a striking visual similarity existed between *Theopedia* and *Wikipedia*—a similarity that springs from the practice of Wikimedia Foundation, creator of *Wikipedia*, freely distributing its engine, MediaWiki, to other groups to create collaborative encyclopedias. But clicking on “About *Theopedia*” reveals that the site is an “evangelical encyclopedia of Biblical Christianity,” and that “Editors/Users are required to personally affirm the entirety of the primary statement of faith,” which includes a commitment to Calvinism (“About *Theopedia*,” n.d.). Students had not investigated this information. In fact, they declared in the debriefing discussion that they were unaware that an “About” link exists on many websites. Accordingly, they were unable to

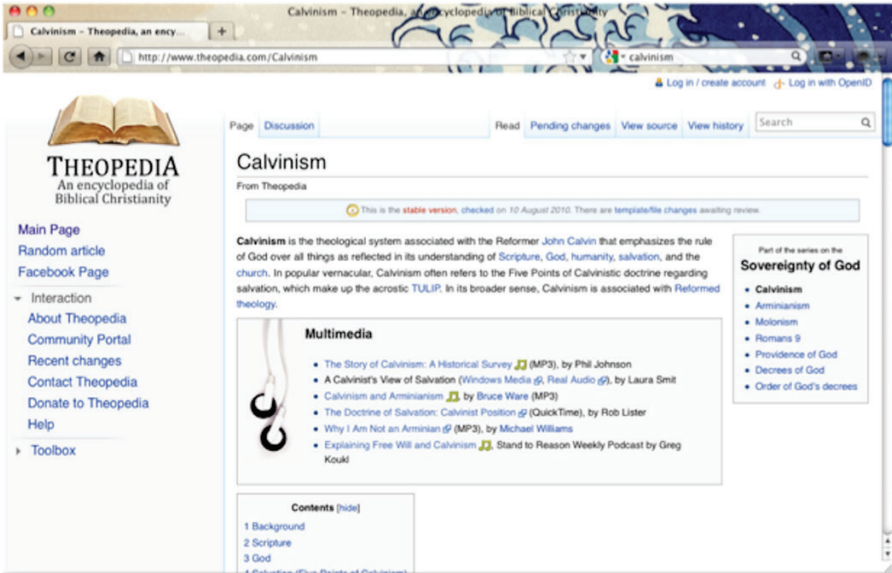


Figure 8.2. Screenshot of “Calvinism” entry from *Theopedia*. Calvinism. (n.d.). Retrieved from <http://www.theopedia.com/Calvinism>.

place this information in its proper context—to understand how it was produced, by whom, and for what purpose. Together, the frequent appearance of the King paper and the *Theopedia* article moved us to consider how a limited understanding of contexts for writing might affect students’ basic IL competencies.

Preliminary results from the Citation Project confirm our finding that first-year students struggle with context in researched writing, noting that they tend to copy, paraphrase, and patchwrite, with little or no summary of the sources they use. In terms of their interaction with sources, the Citation Project found that students are “*not writing from sources; they are writing from sentences selected from sources*” (Howard et al., 2010, p. 187, emphasis in original). Put another way, students are selecting pieces of information to use as they compose, but they are not considering that information in terms of the larger argument being made. The results—at least, in our students’ work—included not only a demonstrated failure to assess a source’s credibility and to represent that source fairly, but also an inability to integrate information gathered from sources into a coherent argument of their own. An analysis of the 2010 assignment (an example representative of all years) showed that the students’ text was almost entirely copied or patchwritten from the websites cited in their sources file (see Table 8.2).

From one perspective, the student writing may appear to be simple plagiarism. Yet as Rebecca Moore Howard et al. (2010) suggest in their study of a set

Table 8.2. Patchwritten passage from 2010 assignment

Encyclopedia of World Biography	Student Text
<p><i>Thomas Jefferson was born in Shadwell, Virginia, on April 13, 1743. . . . At the age of seventeen he entered the College of William and Mary. . . . He read widely in the law, in the sciences, and in both ancient and modern history, philosophy, and literature. Jefferson was admitted to the bar, or an association for lawyers, in 1767 and established a successful practice. When the American Revolution (1795–83) forced him to abandon his practice in 1774, he turned these legal skills to the rebel cause.</i></p>	<p><i>Thomas Jefferson was born in April 13th, 1743 in Albemarle County, Virginia. At the age of seventeen, he enrolled to the College of William and Mary and later focused on law. In 1767 he started a successful career as lawyer but was obliged to abandon this career in 1795 due to the American Revolution (1795–83). He offered his legal skills to the rebel cause and started a new political career.</i></p>

Note: Italics indicate verbatim text from the source, while underline indicates paraphrase.

of papers from first-year writing, when faced with a report-style assignment on an unfamiliar topic in a general composition course, “students might not have had the vocabulary and background knowledge necessary to do anything but patchwrite the passages” (p. 188). They may also lack the expert reading strategies that enable them to make sense of the sources that they are working with. Students do not engage in the “meta-reading” practices that expert readers routinely engage in. In particular, students are unable not only to position sentences and other source fragments as part of a larger argument, as Howard suggests, they are also unable to position a source into a larger and ongoing conversation, both historical and disciplinary. Nor are they reading with compositional or rhetorical purposes in mind. Haller (2010, p. 38–39), makes the point that the rhetorical reader “. . . inhabits his [sic] sources as a rhetorical partner, rather than simply sampling from them for facts and evidence.” As we argue here, first-year students who are not yet academic or disciplinary insiders make “successive approximations” in constructing knowledge. Could patchwriting be one step on the way to developing disciplinary discourse, as Howard et al. suggest? Could reading rhetorically enable students to inhabit more fully the sources they are using, thereby encouraging them not only to better understand a source’s argument but also to grasp the ways in which one source informs, responds to, or otherwise relates to a larger ongoing argument?

ASSEMBLING KNOWLEDGE VIA COMPOSITIONAL “MOVES”

In addition to the copious patchwriting described above, what struck us immediately about the assignments as artifacts of student writing was how rarely

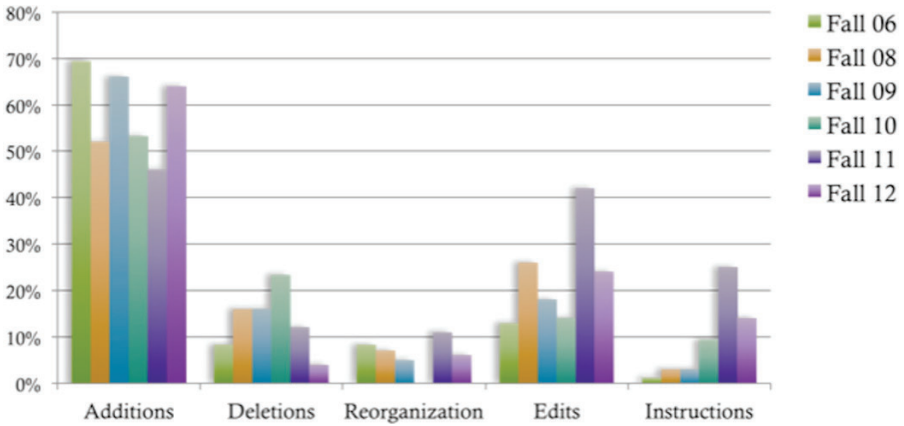


Figure 8.3. Compositional moves by year, 2006–2012. Note: In 2011 and 2012, the students were asked to use the Comments field in the wiki to write instructions to each other during the composition process.

students revised their work. In order to understand students' composing practices better, we coded the assignments to quantify two essential aspects of the composing process: 1) how often students added content, and of what kind, and 2) how often students edited content, and whether they edited primarily by deleting, reorganizing, or revising. The numbers demonstrate the students' compositional practices, in terms of individual classes and collectively (see Figures 8.3 and 8.4). Clearly these novice writers were adding content far more often than any other composing activity. Equally interesting is what students were *not* doing: overall, they were not revising to make better connections across information; they were not often deleting irrelevant information; and they were infrequently reordering information to strengthen coherence. In sum, they were not restructuring or transforming information into meaningful knowledge.

This propensity to add—rather than to delete or reorganize or otherwise revise—is open to several interpretations. One way of understanding this pattern is to embrace Nancy Sommers' understanding that revision is, for novice writers, an afterthought. Sommers (1980) contends that a key difference between novice and expert writers is that experts understand revision as part of a “recursive process” (p. 386) that enables the discovery and creation of meaning, “finding the form or shape of their argument” (p. 384), while novice writers understand revision as a final step in a linear process—a last item on their list of “things to do.” Certainly this attitude was in play with our students: when

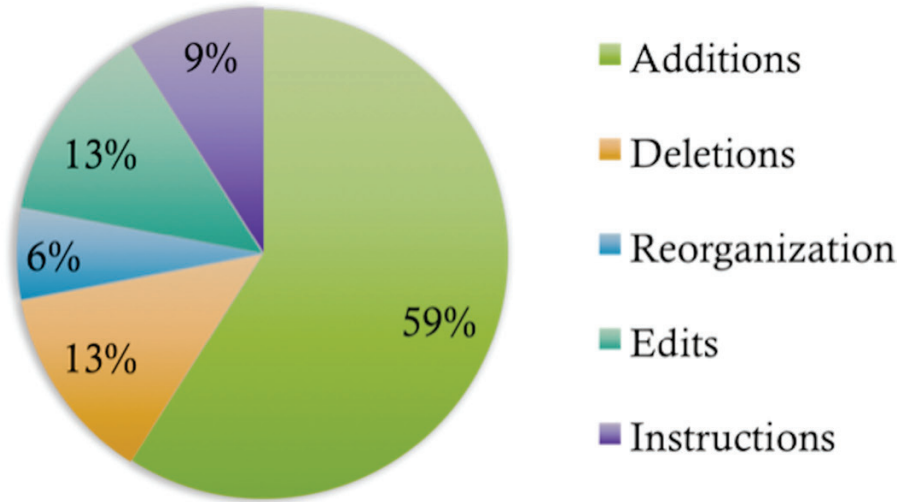


Figure 8.4. Compositional moves, all years combined.

revision did occur in the wiki, it tended to happen much later in the composing process rather than throughout.

Another possible explanation for this lack of revision is that these students, as novices, are working at lower levels of critical thinking—in particular, those defined by Benjamin Bloom in his original taxonomy of Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation (Anderson & Sosniak, 1994, p. 15–25). In other words, students are collecting information, but they are not comprehending (or analyzing, or synthesizing) their sources. (On the mapping of information literacy to cognitive skills, see Keene et al., 2010; Reece, 2005.) Without operating on these sources via higher levels of critical thinking, students will find it difficult to revise their work. Given the students' selection of sources, we might also question how closely students are evaluating what sources they find. While deletion may be evidence that students are evaluating certain parts of the text and deeming them irrelevant, the infrequency of deletion is potentially troubling, suggesting that these novice writer-researchers may be struggling with self-evaluation.

One additional (albeit very different) possibility is that students are hesitant to edit their peers' work. As we examined the collaborative habits of the students—chiefly by noting when and how they wrote instructions to one another in the infrequently used “Comments” section of the learning management system's wiki feature—we discovered that when they did address revision, students

were more likely to suggest changes for the original writer than to edit the text themselves. Could unease with collaborative writing and research have hindered rather than helped the students in their early construction of knowledge?

ORGANIZATIONAL STRATEGIES

The final version of the 2008 assignment appears to demonstrate that students have created a structured, organized, and comprehensive article, as exhibited by the table of contents (see Figure 8.5). Yet closer examination of this table of contents reveals inconsistencies and anachronisms. For instance, Revivalism precedes Puritanism, and the Jesus Seminar, formed in the 1980s (and mentioned in the initial reading that students were given), is discussed at length. Problems of this sort appeared each year—students failed to establish any sort of organizational strategy that would enable them to produce a focused and coherent structure. An expert in the discipline of religious history (or even a more mature thinker) may have been able to eliminate these anachronisms, but these novice writers did not demonstrate that ability. Year after year, the Jesus Seminar (as one example) remained stubbornly present as students drafted their articles—one student would remove the section devoted to the Seminar, and another would put it back in. Perhaps students were responding to the authority of the assigned reading without determining the relevance of that reading's component parts. In other words, the reading assigned by the instructor had a powerful hold over the context in which the students were composing.

That these students routinely failed to make relevant the information they were working with was part of a larger failure that we noted earlier: students were unable to identify or to provide context for the sources they were using or the information gathered from those sources. While expert writers may use the practice of composing to discover relevance and create context, these novice writers composed by dropping information into the article they were writing without any effort to contextualize it. If, as Simmons (2005) argues, IL is to move beyond the simple gathering of information to help students become critically aware participants in disciplinary discourse, the ability both to *identify* and to *provide* context within academic disciplines is crucial, as the *Framework for IL* (ACRL, 2015) document confirms.

An examination of how students structured their articles, version by version, illuminates much about this failure both to identify and to provide context. When coding students' overall organizational strategies, we were looking to determine how often students were organizing material using classification (arranging material into categories and subcategories), chronology (arranging material roughly by date but without working to create a coherent narrative), narrative (arranging material into a coherent story), or analysis (arranging material around a claim, supported by



Version 66 of On Revivalism
Modified by Karen Gocsik on Friday, 11/14/2008 9:35 PM

[↔ Back to Revision History](#) [↔ Back to Wiki](#)

Contents

- 0. Introduction
- 1. Revivalism
- 2. The Declaration of Independence:
- 3. The Virginia Statute for Religious Freedom
- 4. Jefferson: Separation of Church from State
- 5. Thomas Jefferson's religious belief
- 6. Protestantism
- 7. Puritanism
 - 7.1 Puritanism
 - 7.2 Puritans in New England
- 8. Devision of Methodism: Calvinism and Armanianism
 - 8.1 Calvinism and Anti-Calvinism
 - 8.1.1 Calvinism
 - 8.1.2 Ant-Calvinism
 - 8.1.3 Figures that leads to the division of Methodism
 - 8.2 Outline of Wesleyan's Arminianism
- 9. Deism
- 10. Unitarianism
- 11. Socinianism
- 12. The Jesus Seminar
- 13. Joseph Priestley

Figure 8.5. Final assignment, table of contents, 2008.

evidence). We discovered that students began structuring their articles by arranging information either by classification or chronology, and that these early strategies determined later structural choices, to the extent that employing principles of narrative or analysis to arrange the information did not occur.

One early strategy for arranging materials was to employ classification, beginning with a definition of a single term. Given that the assignment did ask students to define terms, this was not surprising. However, in some cases the term students chose at the outset was wildly irrelevant to the topic of Christianity in Early America, as we saw in the 2008 project, which began with a definition of the Pharisees. When students began this way, they kept adding definitions—Pilgrims, Puritans, Jonathan Edwards, Thomas Jefferson—until a tipping point was reached. At that point, someone would produce a table of contents, largely based on the definitions that had already been offered. (While

the Pharisees didn't make the final version of the article, the term had surprising tenacity, surviving until halfway through the composing process, when it was stricken, along with references to Socrates.)

The students' other beginning strategy was to start with a roughly chronological table of contents. This strategy determined how the rest of the project would be organized. In 2010, for example, the first student to create a table of contents positioned Thomas Jefferson as the key figure through which to understand Christianity in Early America. The article was essentially divided into two categories: Christianity before Jefferson, and Christianity as Jefferson practiced it. They later added a glossary, which accommodated information that wasn't directly connected to Jefferson. This table of contents did not evolve as students worked collaboratively on the rest of the article—no one questioned using Jefferson as the organizing principle; no one substantively revised the table of contents in order to ensure a more coherent outcome. In both strategies, classification and chronology, one classmate's initial organizing concept usually determined the ultimate structure of the project.

Clearly neither of these two initial strategies was sufficient to ground a coherent final product. This surprised us: we had assumed that students who began with a table of contents might produce a more coherent article, using that table of contents as an outline. But this proved not to be the case. As noted earlier, groups that began with a table of contents often got "stuck," in that one student's initial structure tended to determine what his or her peers were able to see as relevant. On the other hand, groups that began with definitions, as in 2008, eventually developed a table of contents, but one that indicated only a dim grasp of the topic in that it simply mirrored the (often irrelevant) terms that were already in place. These strategies of classification and chronology served to mask deeper problems in the articles' organization of knowledge, offering only the appearance of structure. We wonder if adopting narrative or analysis as organizational strategies might have yielded more coherent results.

STUDENTS' PERSPECTIVES ON CREATING KNOWLEDGE

Given our sense of the articles' insufficiencies, we were curious to know whether or not the students shared our assessment. Prior to the in-class debriefing discussion one year, we surveyed the students, asking them to assess their work based on criteria adapted from those *Wikipedia* uses to evaluate its feature articles. These criteria ask whether or not the article is: well-written; focused and relevant; useful; comprehensive; well-researched; of an appropriate length; neutral; and appropriately structured ("Featured Article Criteria," 2013). As we can see from the survey results (Figure 8.6), most students shared our sense that the

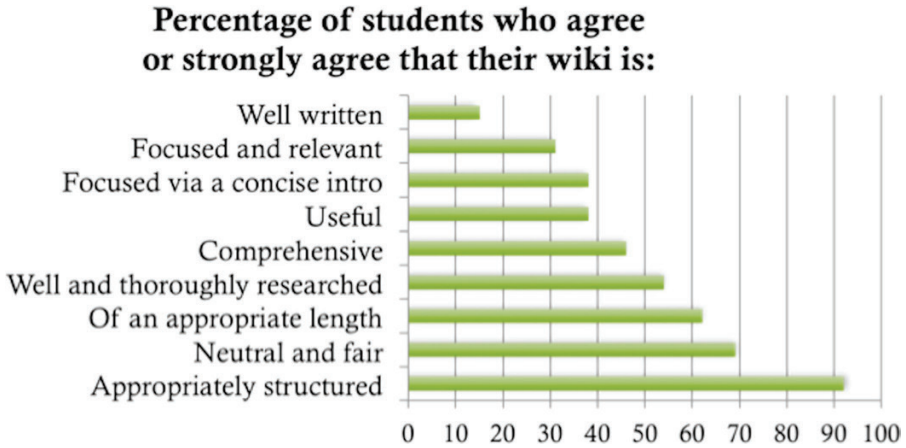


Figure 8.6. Student survey results, 2010.

articles they produced are not well written, focused, or even useful. But the vast majority did view the articles as appropriately structured. In our debriefing sessions, we asked students to talk in particular about their organizational strategies in order to better understand the discrepancy between our assessment of the articles' structure and theirs. Initially they defended the assessment, citing the table of contents and the use of headings as evidence that the material was sufficiently organized. We asked them to look more closely at the structure, encouraging them in particular to consider how these structures did not yield cohesive discussions of the topic at hand. We further challenged them to consider why they made almost no effort to integrate information into a narrative even though the assignment had asked, specifically, that they produce a narrative. We demonstrated, for instance, how rarely they added transitions between sections. We noted that we only very occasionally found comments like this one, which attempts to justify discussing Revivalism before Protestantism: "It is impossible to understand the religious evolution that led to Revivalism without a very basic understanding of Protestantism." In the end, students employed transitions only one percent of the time as a composing strategy.

In our 2010 debriefing, when we asked the class why they hadn't turned to narrative as a way of crafting the article, they offered an intriguing response: they stated that they couldn't create a narrative *without having all the knowledge first*. This struck us as a very interesting aspect of the expert/novice divide. As experts, we regularly rely on narrative as we construct knowledge—shaping narrative helps us determine both what we know and what we need to learn. Our students, however, were surprised when we asked them why they did not use

narration as a knowledge-making tool, declaring that they felt disallowed from attempting narrative because they didn't know enough yet. Students described high school courses that relied heavily on the practice of "frontloading," whereby teachers presented them with information and quizzed them to assess their mastery of that information before asking them (or permitting them) to operate on that information in any meaningful way. Students had been taught that they needed *to know* information before they might comprehend, apply, analyze, synthesize, or evaluate it (here again we are using the categories from Bloom's original taxonomy). Students had not yet encountered the idea that applying information, or analyzing it, or attempting to synthesize it, might be one way of coming to understand it, *to know* it.

We came also to understand from these conversations that these students had not been taught how to contextualize knowledge, either generally or in the context of a particular discipline. In high school and even in their introductory college classes, instructors had done the contextualizing for them, choosing the works they read and telling them why these works were important. As a result of their instruction, students had little practice in the sorts of activities that experts regularly employ, including using narrative and analysis as methods either to determine relevance to the discussion, or to designate what aspects of a particular discussion might require more research, evaluation, and inquiry. In the end, this assignment and its ensuing discussion moved us to consider what aspects of our own instruction might be binding students to their novice status, keeping them in a position where they find it difficult to invent the university for themselves.

IMPLICATIONS FOR TEACHING

While our sample size does not permit us to draw definitive conclusions about how first-year students construct academic or disciplinary knowledge, our project raises intriguing implications for teaching. The assignment not only permitted us to document novice practices, but also helped us better understand the gap between what our students *actually do* when they construct knowledge, and what we *expect them to be able to do*. In sum, our students looked for information via search tools like Google. They relied on websites more than they relied on peer-reviewed articles or books. They used patchwriting to stitch information loosely together. Perhaps as a result of this patchwriting—composing not from sources but "from sentences from sources" (Howard et al., 2010, p. 187)—students approximated coherent knowledge. In this sense, their "patchwriting" reflected and perhaps also contributed to a practice of "patchknowing"—another way of thinking about our students' approximation of knowledge. Students did not identify or create adequate context for the information they were employing.

Neither did they employ methods of narrative or analysis to stitch together the patches of information that they had uncovered. They were therefore unable to develop an internal coherence for their work. In the end, we came to understand that if first-year students are in fact inventing the university, then that university is rather tenuously constructed, lacking the disciplinary and cultural contexts necessary to shape a coherent whole.

Until they can learn to create knowledge within disciplinary contexts, students will remain novices, outsiders to the university and its practices. If they also lack cultural context, as these students did, then the challenge of coherence becomes even more daunting. As instructors, we must consider how we can design IL instruction so that students can acquire the tools to understand and shape (and also revise) knowledge within academic contexts. We might first consider whether the *approximation of knowledge* is an important and perhaps even necessary step in the *authentic creation of knowledge*. As Howard et al. (2010) suggest regarding patchwriting, we wonder whether the assembling of information, even when poorly managed, might offer students an improved understanding of how knowledge is generated—provided that instructors and librarians ask students to reflect, collectively, on their practices. Our work also underscores the observation that Barbara Fister made in her Keynote Address at the 2013 Library Orientation Exchange (LOEX) conference: research papers as we've been assigning them in first-year composition classes should be abandoned (Fister, 2013). Asking students to enact or perform research prior to the establishment of disciplinary expertise will prove successful only when, as Fister notes, that assignment is heavily scaffolded—and, we would add, when one not only emphasizes process over product but also values failure (which is reflected upon, analyzed, and collectively discussed) as much as success. Assignments like ours provide students and instructors the opportunity to make research and writing practices visible: with instructors and librarians as guides, students can observe, reflect on, and then assess practices that result in the approximation of knowledge; instructors and librarians can then guide students to look beyond these practices, deepening their IL competencies. Instructors can also observe their own assumptions about student practices, discover any misconceptions they might have, and revise their instruction accordingly.

To accomplish this sort of reflective practice among our students, we should design our research instruction to focus less on *what* students should know, and more on *how they come to know it*. Too often IL instruction focuses on the *what*—what search tools and databases to use, what standards we might use to evaluate a source's credibility, and so on. Focusing our instruction on students' existing practices, and using these practices as the object of our instruction, is a good way to initiate a discussion firmly rooted in the *how*. In this way, our assignment

and others like it can encourage students to practice the various “frames” for IL currently recommended by the ACRL (2015). For instance, through this wiki exercise students experienced firsthand how resources must be evaluated and employed based on the context in which the information will be used (Frame One). Because composing the wiki article is an exercise in structured failure, students came to understand research as inquiry that depends on “increasingly complex or new questions whose answers in turn develop additional questions of lines of inquiry in any field” (Frame Four). Once the assignment was complete, and we had discussed better strategies for finding and composing with sources, students came to see the search for information as a strategic exploration, realizing that searching for information requires “the evaluation of a range of . . . sources and the mental flexibility to pursue alternate avenues as new understanding develops” (Frame Six).

In sum, as we develop our students’ IL practices, we will need to partner in order to develop ways to help our students move from the methods novices use to construct knowledge to the methods experts use. We should design assignments that engage students in the kinds of strategies that experts use to contextualize information and to create new knowledge within their fields. We should demonstrate how experts use information to create questions, or to point to areas for additional research. We might demonstrate how employing the principles of narrative helps experts determine what information is relevant or irrelevant to their investigations. We might also show how employing analysis encourages the logical connections between bits of information that enhance coherence within expert writing and research. Whatever assignments we design, our aim should be to move students from their novice approximation of knowledge, toward the invention of an authentic university to which they can contribute, and in which they might thrive.

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APPENDIX A: ASSIGNMENT

Read the assigned chapters. Make a list of terms and names that you need to know in order to understand the topic and the period. Over the weekend the class will work together, using the Blackboard wiki, to define these terms, as succinctly and thoroughly as possible. As you work, try to create a narrative about what Christianity was like in early America. Feel free to revise the entries—that's what a wiki is for. Use any credible source, but make note of the sources that you use and put the full citation in the Sources wiki page.

Note: The wording of the assignment changed slightly over the years; this is representative.

APPENDIX B: EXAMPLES OF SOURCE TYPES

Academic (free) website: Sites published by academic institutions or for scholarly use, such as university archives and faculty research sites (with a .edu extension); the *Stanford Encyclopedia of Philosophy*; the *Catholic Encyclopedia*.

Religious website: Sites published by religious organizations to promote or explain religious faith: Theopedia.org, Forerunner (Christian college newspaper aggregator), official site of the Unitarian Church.

Government or Nonprofit website: Sites published by federal or state government agencies, or by nonprofit nonreligious organizations: Library of Congress, ohiohistorycentral.org.

Academic resource (paid library subscription): Resources subscribed to or purchased by the institution's library, accessible only to members of the institution: JSTOR, EBSCO, *Gale Encyclopedia of Religion*.

Commercial or business website: Sites published by businesses or for-profit entities: History.org (official website of the History Channel), Answers.com, BBC.

Personal website: Sites authored by individuals and identified as such: Sullivan-county.com (amateur historian in Ohio), Positive Atheism.