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Learning How to Learn

Josna Rege

A recurrent concept in this issue is that of metacognition: reflecting upon one's mental processes or, literally, thinking about thinking. It is immaterial how rich our teaching content is, if our students are unable to absorb it. We must pay as much attention to *how* we teach as to *what* we teach and as much attention to how students *learn* as to how we *teach*. Through metacognitive thinking about their own process of learning, students can deepen and internalize course content, gaining not only a body of knowledge, but lifelong skills in how to learn.

In their essay, "Teaching Intellectual Teamwork in WAC Courses through Peer Review," Jim Henry and Lehua Ledbetter recommend that students engage in "metacommentary" about their own and each other's writing. In arguing for the efficacy of peer review in improving student writing, they make the case that time spent on this process is time well spent (not time lost to the teaching of content). Metacommentary is one of three essential components of their peer-review model: students writing reflectively about their writing and sharing those reflections as part of the peer-review process. Discussing both their own classroom experience and scholarship on the role of metacommentary in student learning, Henry and Ledbetter make the case that the "intellectual teamwork" involved in the process enhances the problem-solving skills students need in order to develop their writing.

Reabeka King's essay, "Metacognition: Information Literacy and Web 2.0 as an Instructional Tool," similarly privileges metacognition in the learning process. Reviewing the literature and drawing upon information literacy competency standards developed by the Association of Colleges and Research Libraries, King argues that in an era when information literacy has become an essential skill, the user-centered Web 2.0 can promote not just the delivery of content but higher-level learning processes, such as metacognition, both in and outside of the classroom.

The three teaching reports in this issue also place considerable emphasis on meta-level learning. In "Students in the Archives: A Short Paper on a Significant Learning Experience," Sarah Berry describes an archival research project in a 200-level interdisciplinary course, organized in a four-phase process, that encourages students to become "active producers. . . of knowledge": the project includes assessment components that function similarly to the

metacommentary exercise in Henry and Ledbetter's essay in encouraging students to become self-directed learners. Like King, who argues that exercising their metacognitive skills can empower students to become lifelong learners and community-builders, Berry describes how the individual assessment of the project complemented the collaborative assessment by giving students the opportunity to exercise their independent thinking and analytical skills, opening up their "vision of a larger picture and encourag[ing] reflection about their own place in it."

Barbara Cherem's teaching report, "Using Online Formative Assessments for Improved Learning," also places an emphasis on students' reflection about their own learning process. In recent years most teachers will have become all too familiar with summative assessment, which evaluates students' mastery of course content. Cherem, however, contends that formative, or process-driven, assessments—"for learning, rather than ... of learning"—enable both teachers and students to achieve higher learning outcomes with lower student anxiety, "give students an added sense of ownership in their development, and, ultimately, promote the comprehension of the course content."

The last teaching report addresses the problem of emboldening first-year students to find their voices as writers. In "Creating Connection: Composition Theory and Creative Writing Craft in the First-Year Writing Classroom," Carey Smitherman and Amanda Girard seek to develop metacognitive skills to prepare students for writing in the disciplines. After a review of contemporary composition theory, they conclude that even approaches that aim to give students a voice risk plunging them into discussions of composition theory where they are apt to lose confidence. Instead, Smitherman and Girard advocate classroom conversations about creative writing craft, "creating connection" by encouraging first-year students to begin reflecting upon their own writing practice and thinking

of themselves as writers, and, in the process, introducing them more gently to composition theory.

By coincidence, even the book reviews in this issue address the subject of how students learn, drawing from both research in cognitive science and experience in the classroom. Jennifer Berg reviews *How Learning Works: Seven Research-Based Principles for Smart Teaching* (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010), and Matthew Johnsen reviews *Brain-Based Learning: The New Paradigm of Teaching* (Jensen, 2008).

With this issue *Currents in Teaching and Learning* completes three years of publication. We are steadily finding our identity and gaining momentum, with a small but growing list of subscribers and submissions from an increasingly diverse group of contributors affiliated with colleges and universities, both public and private, large and small. *Currents* is now being indexed by EBSCO Host online databases and the MLA International Bibliography and is listed in the MLA Directory of Periodicals.

Our active Founding Advisory Board contributes materially to the production of every issue. We offer heartfelt thanks to all our board members, both current and past, without whom this journal would simply be unable to function: Daron Barnard, Sue Foo, Maria Fung, Sean Goodlett, Ruth Haber, Matthew Johnsen, Pearl Mosher-Ashley, Jeffrey Nichols, Bonnie Orcutt, Beth Russell, Daniel Shartin, Catherine Wilcox-Titus, Karen Woods Weierman, Karl Wurst, and Janice Yee. This issue we extend special thanks to retiring member Pearl Mosher-Ashley, who played an important role in developing our submissions guidelines, and a warm welcome to Sean Goodlett of Fitchburg State University, who joins the board as co-editor of the Book Review section. Thanks also to Andrea Bilics, Director of the Worcester State University's Center for Teaching and Learning, for all her support and guidance and WSU's

Division of Academic Affairs, who first floated the idea of a peer-reviewed journal of teaching and learning and have fulfilled their commitment to support the journal, even through hard times.

The *Currents* Advisory Board worked closely together for months before we ever produced an issue, in order to define our scope and particular mission. We continue to uphold our mission as

a peer-reviewed electronic journal that fosters nonspecialist, jargon-free exchanges among reflective teacher-scholars. Published twice a year and addressed to faculty and graduate students across the disciplines, *Currents* seeks to improve teaching and learning in higher education with short reports on classroom practices as well as longer research, theoretical, or conceptual articles, and explorations of issues and challenges facing teachers today.

We agreed from the start that, as an electronic journal, we ought not to limit ourselves geographically, and we are glad that we made that decision, delighting in the international scope of our submissions. At the same time we continue to do “inreach” to colleges and universities in New England, public colleges and universities in Massachusetts, the Colleges of Worcester Consortium in Central Massachusetts, and the faculty in our home institution. We still have work to do, particularly in attaining a greater disciplinary balance and in continuing to clarify our definition of an article that addresses an audience across the disciplines. One thing we are sure of: if an article is based in a particular academic discipline, it must explicitly consider its relevance and applicability to other disciplines and classroom settings and to *Currents*’ audience of teachers across the disciplines.

As the number of submissions increases, we find ourselves needing more peer reviewers, since we send each submission out to at least two, sometimes three readers. Grateful thanks to our hard-working referees for Volume 3: P. Sven Arvidson, Daron Barnard,

Andrea Bilics, Andrew Bourelle, Timothy Dale, Eric Nathan Dickman, Sue Foo, M. Thomas Gammarino, Sean C. Goodlett, Ruth Haber, Michael Hachey, Jim Henry, Kim Hicks, Li-Shih Huang, Matthew Johnsen, Amanda Katz, Jesse Kavadlo, Justin Koenitzer, Randy Laist, Holly Larson, Ana Perez-Manrique, David Marlow, Patricia Marshall, Joyce McNickles, Pearl Mosher-Ashley, Jeffery Nichols, Mathew Ouellett, Bonnie Orcutt, John Pruitt, Dan Shartin, Rashna Singh, Seth Sorgan, Pennie Ticen, Don Vescio, and Karen Woods Weierman. If you are a new subscriber or contributor, we invite you to join the team.

Finally, we thank Brian Burgess, our outgoing Graduate Assistant, who took an active role as our Editorial Assistant for a year and a half; we miss him and wish him the very best. And we welcome Elizabeth Kappos, our capable new Editorial Assistant, who jumped in with a will and has already made herself indispensable. ■■

Note

The title of this editorial is taken from a book by the Sufi teacher Idries Shah (1981). In it, Shah discussed habits of mind, both individual and collective, that create obstacles to higher learning; he recognized that individual differences among people require many different approaches to teaching that cannot be reduced to a standardized formula; and his practical approach to learning focused on what works. It serves to remind me, in all the discussion about new discoveries in the cognitive sciences, that there are highly sophisticated sciences that are hundreds, even thousands, of years old. We have a great deal to learn, but first we must learn to acknowledge our preconceptions and open our minds.

References

- Shah, Idries. (1981). *Learning how to learn: Psychology and spirituality in the Sufi way*. Introduction by Doris Lessing. First U.S. Edition. San Francisco, CA: Harper & Row.

Teaching Intellectual Teamwork in WAC Courses through Peer Review

Jim Henry and Lehua Ledbetter

Abstract

Now that the writing-across-the-curriculum (WAC) movement is firmly in place on hundreds of college campuses, courses that leverage writing to enhance the learning of disciplinary content and conventions are quite common. Perhaps less common among instructional practices is peer review, a technique often used in introductory composition courses. Because faculty outside of Composition Studies may be less familiar with teaching techniques for peer review, this teaching report provides an introduction to the literature on peer review and a review of WAC sources supporting its use. Against the backdrop of this introduction, we offer a case study of our own approach when teaching introductory composition, with excerpts from students' written performances to illustrate the processes and to support our claims about its efficacy. An appended table offers our step-by-step process for positioning students to review their peers' writing; this process can be adapted to other disciplines and other goals.

Keywords

peer review, collaborative learning, response to writing, modeling, metacognition

As director of the Mānoa Writing Program, **Jim Henry** oversees more than 500 writing-intensive courses per semester. He has published extensively on the teaching of writing, and in 2009 he was awarded the University of Hawai'i Board of Regents' Medal for Excellence in Teaching.

Lehua Ledbetter taught first-year writing and worked as a writing mentor at the University of Hawai'i before pursuing her Ph.D. at Michigan State. She currently serves as a research assistant in MSU's Writing in Digital Environments research center.

Introduction: Defining Terms and Clearing Misconceptions

A recent article in the *Chronicle of Higher Education* (Anderson, 2010), "Peer Editing Could Use Some Revision," offers a snapshot of (mis)understandings of the practice of peer review. The article offers some guidelines for "peer-editing" sessions, yet as readers' comments reveal, the term itself is ill-chosen. Most scholars in Composition Studies reserve the term "peer editing" for only the last stage in the writing process, after higher order issues of purpose, audience considerations, and disciplinary conventions have been addressed (Cahill, 2002; Grimm, 1986; Holt, 1992). "Peer review" or "peer response" refers to this practice of positioning students more broadly to respond to one another's writing to enhance understandings of such "higher order concerns" (Paton, 2002; Purdue OWL, n.d.; Rose, 1985). Writing instructors across the disciplines *can* fruitfully position students as peer editors—and we offer a strategy for doing so as part of our case study—but it is important to distinguish this practice from those peer reviews that contribute to learning to write and learning to

think within a specific discipline. One poster's response to Anderson's article speaks to the importance of this distinction: identifying two proofreading errors in the article and asking how many of her students would have been capable of catching them, the poster concludes with "My guess would be none[.] ... Admittedly against nearly all recent thought to the contrary, I see little value in 'peer editing,' for it is almost never editing at all" (profpeter, 2010, n.p.a.).

Yet students *can* catch errors, just as they can contribute valuable responses to one another's evolving writing in earlier stages, as we demonstrate below. Key to enabling them to do so is to indicate precisely the kinds of response expected for each review and to frame the review sessions carefully with respect to the assignment and course expectations. Such teaching requires some extra time in preparation and classroom execution (see Spear, 1998; Woods, 2002), and we acknowledge (along with a reviewer of an earlier draft of this article) that faculty in the disciplines may be loath to dedicate time to peer review if it seems to detract from class time devoted to "content." Yet we hope that by the end of this article, readers will agree that peer review can actively contribute to teaching content, thus justifying the time spent on it. Our approach suggests soliciting collaboration from the campus writing center, which might also help instructors enhance connections with campus support for writing.

Scholarship on Peer Review in Writing Across the Curriculum

Analyzing peer response to writing in an anthropology course in 1991, Herrington and Cadman arrived at the following conclusions:

1. Peer review can create occasions for active and reciprocal decision-making where students are their own authorities, not the teacher. Instead of following a peer's or even a teacher's advice uncritically, they feel more latitude to decide for

themselves how to act, specifically how they will respond to a peer's response. Indeed, the value of peer-review exchanges can be realized as much in instances where a writer decides not to follow a peer's advice as where she does.

2. Students can give sound advice to their peers, even on matters they are having difficulty with in their own writing.
3. Writers can profit both from the response they receive about their own drafts and from reading the drafts of others.
4. In peer-review exchanges, students focus not only on matters of organization and style, but also on substantive matters of interpretation and methods of inquiry central to learning in a given discipline. As they do so, they are working out their own understandings of methodologies, ways to interpret information, and ways to present themselves in their writing. (p. 184)

Recent studies have confirmed that peer review has proven a valuable resource for instructors across the disciplines. One study of over 300 writing-intensive courses in the natural and applied sciences showed that instructors who included peer-reviewing among their practices were more successful in engaging students in writing (Chinn & Hilgers, 2000). In another study, undergraduate science students who engaged in Web-mediated peer review of toxicology reports made more revisions that improved their reports than those who reviewed their own drafts (Trautmann, 2009). Cho, Shunn, and Wilson (2006) have found that students are able to provide reliable and valid "rating" of writing when using the same rubric as the instructor, and Patchan, Charney, and Schunn (2009) have found that comments from instructors and students to drafts were "relatively similar," even though instructors were understandably more adept in providing content-specific feedback. Artemeva and Logie (2002) examined the role of peer feedback (referred to as "intellectual team-

work”) in aiding written and oral communication in engineering students. Having elicited suggestions from students, they developed a peer feedback strategy that increased the amount of feedback addressing higher-order concerns—issues of “organization and evaluation”—from the first to the final drafts of a writing assignment.

In sum, the literature demonstrates that students can provide valid responses to their peers and can even collaborate with instructors to develop strategies for addressing higher order concerns. When peer review is practiced, students engage more with their own writing and produce more substantive revision. Based on such scholarship, writing-across-the-curriculum practitioners have established a number of guidelines to help instructors provide skillful and attentive guidance to peer review. The online WAC Clearinghouse at Colorado State University, noted in the references, includes pages devoted exclusively to such guidelines. The case study that follows offers an application of tenets found there for our specific course and discipline yet adaptable to other disciplines while maintaining core features.

Applying the 3 M’s—Multiple Technologies, Meta-Commentary, and Modeling—in a Composition Course Focused on Sustainability

Jim Henry, the instructor for the course, was assisted by Lehua Ledbetter, who was then a master’s student in English and working as a writing mentor to students in the class by attending all classes with them and conducting regular out-of-class conferences, a valuable part of our learning strategy that employed a process approach to writing. Her role was important in enabling this successful staging of peer review, and we suggest that instructors across the disciplines contact their campus writing centers to request a tutor who can similarly help set up the peer review. Most centers will be familiar with the recent trend toward “on-location

tutoring” (Spigelman & Grobman, 2005) and will probably welcome the collaboration. (And though approaches to peer review can vary significantly, an instructor equipped with this article and ideas about how s/he would like to deploy peer review could very likely find a willing collaborator through the writing center, WAC offices, or writing fellows, depending upon local structures.) Below we offer specifics on the rationale and uses of each of our 3 Ms to support such collaboration.

Multiple Technologies

Our first-year composition course focused on sustainability, and Jim sought to stress this theme not only through course activities but also through course delivery. The syllabus was online, and the course also had a password-protected site on the university’s Web forum. Most readings were posted there, and students were informed at the outset that they would be using this resource heavily, posting regularly online. Because this was not a distance learning course, however, we wanted to maximize the advantages of face-to-face meetings to firmly establish the guidelines for peer review and closely monitor student application of those guidelines. We began with pen and paper in class: we wanted to dramatize this moment to assure strong engagement and to support student mastery of the practice, because the intellectual teamwork that we sought to nurture would depend very much on positioning students as valuable respondents to one another. We did not have many pen-and-paper moments in the classroom outside of peer review sessions, but for those sessions it proved key: we could circulate as students responded to one another and discern at a glance whether students were adding ample hand-written commentary on their peers’ drafts. Determining if this commentary was valuable to student writers—for us as instructors as well as for student authors—occurred in follow-up exercises that shifted back to using our online course space, as will be illustrated below. This meshing of technologies

also enabled careful sequencing of assignments that followed up quickly on the in-class response to help us teach effective peer review.

Our introductory composition course targeted student learning outcomes that included an ability to compose texts that achieve a specific purpose and demonstrate an awareness of audience. We devised the mnemonic of “aim, audience, and authorship” to encompass these outcomes and to position students as the authors who would be writing frequent metacommentary for their writing by using this mnemonic. We explained the concept of “authorship” as encompassing the image or persona that the student writer would project of him- or herself, thus invoking considerations of tone, style, and voice, as well as of usage and grammar. This metacommentary consisted of cover memos for each draft to be reviewed, in which the author discussed his or her intentions for each of the categories and for each specific assignment. Peer reviewers could then compare their readings of drafts with authors’ stated intentions to provide feedback. We elaborate on this practice and its grounding below with a particular eye to aim, audience, and authorship, as these concepts can be taught across disciplines.

Metacommentary

The use of metacommentary as part of peer review is grounded in research on metacognition, a key part of cognitive processes and problem solving as demonstrated by research in psychology (Efklides, 2001; Flavell, 1979). Within cognitive psychology, it is “generally accepted that metacognition is a model of cognition, which acts at a meta-level and is related to the object-world” (Efklides, 2006, p. 4). Metacommentary extends this definition: metacognitive writing is writing at the meta-level that is related to the object-world of the writer’s audience as part of a problem-solving approach to learning. Efklides (2006) supports the argument of metacognition’s potential to enhance collaborative problem solving, noting that students pick

up and learn from each other’s meta-experience (ME) cues:

...collaborating peers in problem solving co-regulate their learning on cues from ME of their partner. Salonen, Vauras, and Efklides (2005) further showed this effect of ME that reveals the social aspect of metacognition. Thus, ME are [sic] an essential component of the self-regulation process as well as of the co-regulation or shared-regulation of cognition. (p. 9)

To achieve the positioning of students as successful collaborating peers, we knew that we would need to guide their uses of metacommentary very carefully. To do so, we first explained the concept; then we showed some examples of metacommentary written for drafts by students in previous sections of the course. We stressed that students should write at least one good paragraph each on their intended aim(s), authorship, and audience, pointing to specific places in their drafts, if possible. The paragraphs could designate both successful performances and those needing further attention to enlist respondents as co-problem solvers. Students were to arrive in class with their printed-out drafts and metacommentary ready for peer review.

Modeling

“Modeling” is a valued pedagogical technique, as evidenced by the use of modeling in a range of disciplines: for example, structural models enhance learning in engineering classes, while real-world models assist the application of formulas in mathematics. In writing instruction, modeling refers to a practice in which students are encouraged to interact with more experienced writers and their texts. In doing so, students might refine their own composing practices. In addition to an instructor’s models, a peer can offer models that other students observe and from which they learn. In social-cognitive theory, Bandura (1997) established the value of social interaction to enhance learning, insisting that peer models “can operate as a potent force in

the development and social validation of intellectual self-efficacy” (p. 234). As a force central to authorship, self-efficacy contributes to students’ learning of writing skills.

To set up our modeling of peer review for the class, we each composed a two-page draft for the first assignment complete with metacommentary, exchanged our drafts, and composed copious commentary in longhand, filling the margins with comments and writing a paragraph of summary response at the end. The assignment was called a “geo-biography,” defined on the online syllabus as “an autobiography that includes reflections on the way your life to date has been shaped by the geographies you have lived in or visited” and that could include places “as intimate as your desk at home, your kitchen table, or your favorite place to meditate.” It was conceptualized to achieve specific goals: familiarizing students with one another to begin building a classroom learning community; tapping the research and teaching in the subfield of eco-composition to stress “place” as it shapes human subjectivity; and establishing this grounding in “place” as a cornerstone for later assignments. The first draft was to be two pages maximum, single-spaced, with a space between paragraphs. Once we had composed longhand responses to each other’s drafts, we scanned these responses into a PDF to be deployed during class.

Students had been required to post their drafts complete with metacommentary to the password-protected class Web site the day before the session devoted to peer review. Reviewing these drafts quickly, Jim had placed students in groups of three, using topics, approaches, or other identifiable features to determine these groups. In class, he stressed that this procedure would recur throughout the semester and that the rationale for grouping would shift with assignments and with individual performances that demonstrated authors’ specific strengths and challenges. Then he projected Lehua’s response to his draft onto a screen

so that students could view the comments and so that he and Lehua could talk about them. (See Figures 1 and 2.) We deliberately set up this session as highly performative—revealing the responses and discussing them rather than distributing them on paper—because we did not want students to emulate the form so much as the collaborative task of problem solving, the “intellectual teamwork.” The “problem” that they would be helping each other solve was then revealed: help your authors expand from two pages to four.

Students then set about reviewing each other’s work. As they responded using pen or pencil, we each circulated to answer questions and guide the activity. At the end of a class period of 50 minutes, every student had a completed a handwritten review for a peer. They then had three homework assignments: (1) scan these drafts filled with handwritten response and upload them to the class Web site; (2) compare their own performance as a respondent with those of Jim or Lehua (which were being uploaded to the class website as they worked) and at least one other student; and (3) write a paragraph or two about how they planned to expand their drafts to reach four pages.

The initially uploaded drafts with metacommentary showed that the large majority of students understood the logic underpinning metacommentary and performed within this genre quite adeptly. In discussing his intentions for eliciting a specific response from his audience, for example, one student wrote:

I hope to elicit at least a little amusement in my writings. I understand that I am a rather dull individual, so feelings of excitement and humor are often void in my writings.

The account did indeed include amusing anecdotes, and his respondent countered his assertion that he was “dull,” concluding his summary comments with “btw, it’s not boring!” In addition, the peer reviewer pointed out how the author could enhance the draft by re-orga-

Meta-Commentary for Geo-Biography

In this first draft, I was really trying to capture what it was like to grow up in a small town in a poor and remote state in the 1950s and 1960s. I ran out of room because we were limited to two pages, but I'm curious as to what my readers(s) think of it. Did the story about the dead guy take up too much space? I think maybe I did a decent job of representing the time period, but I'm not sure I did a very good job of representing the town where I grew up. I also didn't talk about one of the most important places in my high school life—the field house where I played basketball as part of the state champion Big Reds! ☺ Maybe I should junk the dead man and talk more about that? I also didn't talk much about being an ardent student, but that's partly because I didn't want to come across as the predictable college professor. What parts do you want to hear more about, and what parts (if any) should I cut? I also didn't really do any research the way Dennis Kawaharada did. Do you think that would make it better? If so, do you see any possible places where I could insert some?

Authorship

I'm trying not to come across as the stereotypical English professor (whatever that is), and I'm also trying to create a narrator that students will be able to relate to at least a little bit, despite our differences in age. I tried to write in everyday language, but once or twice I think I waxed academic. I also wanted to "teach" just a bit, since I'm writing in the dual role of author and teacher, so I tried to approach the notion of place in a way that I'll be able to connect back to when we get to later assignments. I guess my narrator is partly a historian, too, when he reflects on specific conditions during that time period.

Audience

I see the students in the class in my mind's eye as I write, and it seems that most of them are from Hawai'i. That caused me to add the references to temperatures and snow, to emphasize what winter is like in that part of the country. (I'll be interested to see if Sara or Maryam include any similar kinds of details.) In this sense, I guess I should have added "geography teacher" to my authorship. I don't want to come across as a geography lecturer, but rather as a kid who remembers the details of weather, climate, and seasons, the way almost all kids do. (Or at least *did*, before the computer age.)

Aim (Purpose)

I wanted to humanize myself so that students can see that we really do have a lot of stuff in common. I also wanted to tell a spooky story well, once I remembered it. (Did you get chicken skin?) As I said above, I also wanted to teach a bit, but without lecturing. I am super conscious of how different my life was from my audience because of the different eras in which our respective childhoods transpired, and I want that to come through. I think it's an important part of why we set the course up this way: how do we go back through our histories, and the histories before them, to build knowledge on the places we have lived, and where we will continue to live, in ways that help us make decisions that keep those places—and an honoring of them—in mind? Not sure if that part came across as well as I like, but once again, I don't want to "lecture."

your reader. I think you might also tell a story or two about your experience playing w/ the Big Reds. (as you mentioned earlier) - it could be an exciting way for readers to connect to your experience of that place!

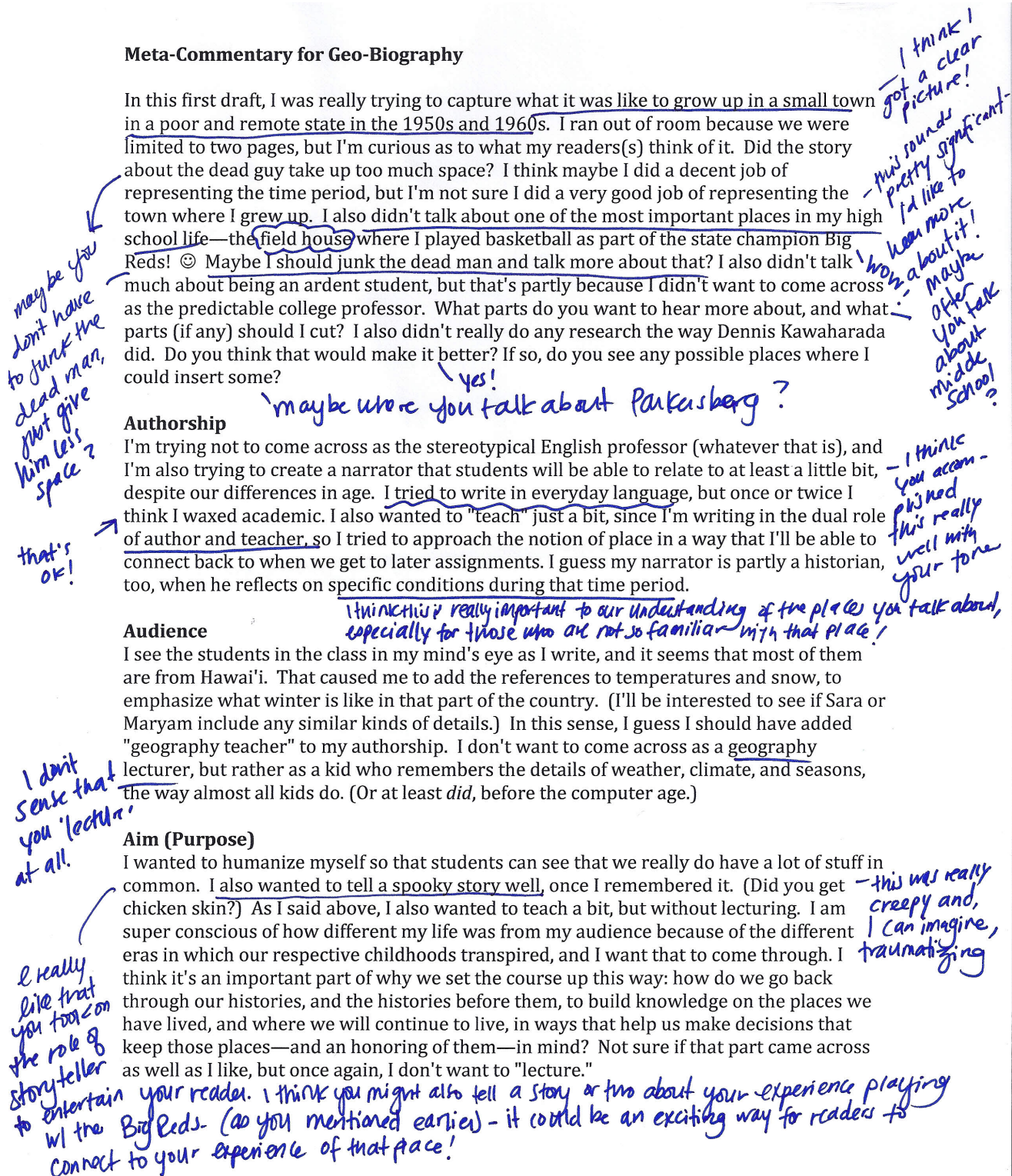


Figure 1. Peer Review on Metacommentary

this is a really important detail-but I bet you could find a more exciting or compelling way to introduce this big event! ☺

Jimi Hendrix, Bill Bradley, and a Small Town Boy

This must have had an impact on how you & your family thought about time since you couldn't just pop s.t. in the microwave.

I was born in Parkersburg, West Virginia, in 1952 of ancestors from Scotland on my Dad's side and Germany (I think) on my Mom's. Parkersburg is a small town of 40,000 people on the Ohio River, and the main economy is tied to the chemical industry. My earliest memories of the small red-brick house we lived in include a side porch with honeysuckle vines that smelled great in summer, and a big vegetable garden in the back yard. I remember my mom and dad tilling the garden by using one of those one-blade tillers meant to be pulled by a donkey or horse. Instead, my dad pulled it along in front with a rope and my mom guided it. Like just about every other family in the neighborhood, we would can vegetables and fruits from the garden during the summer so that we would have some variety in the winter. (This time period was before frozen foods had become common and way before the mass marketing of microwave ovens.)

I would like to hear more detail about this house... what made it special?

not sure if this communicates as much as a time... I'd love to hear more details about the space this TV occupied

When I was eight, my uncle gave our family a television, and we were the first on the block to own one. With its antenna (cable had not yet been commercialized) we got the three major networks, and programming ran from about 9 a.m. until 10 p.m., when stations would sign off and play the "Star Spangled Banner," then default to white noise and snow. (Speaking of snow, another early memory was of a huge snow storm that eventually left four feet of snow and closed down schools for a week, during which we went sledding every day, using everything from trash can lids to real "Flyer" sleds that you could actually steer—somewhat.) My other early memories are of endless summer days that would culminate in twilight games of kick the can under the yellow glow of the streetlight, followed by a few minutes of heaving handfuls of gravel up towards the light to watch the bats dive bomb them.

I really love these details. They convey a sense of what it must have like to be a kid in a less hectic pace of life.

As towns go, Parkersburg was ^{hmm, what more descriptive word might work here?} ok growing up—in that era there was very little crime, we had good public schools, and the economy of the whole nation was starting to boom. My dad's job on the DuPont loading dock kept getting better and better because of the booming economy, so that when I was eleven, our family was able to move from the "wrong side of the tracks" to the north side of town. My mom was a school teacher and both my parents were big on education. The better schools were on north end, and my mom convinced dad to move.

At my new school (McKinley!), each grade had different levels, and even though I had mostly A's on my report cards at my previous school, they put me in the slow section. I was also tall and a little goofy looking (partly because my dad insisted on cutting my hair to save money and he was lousy at it), so I stuck out in a crowd. It felt like everybody—kids and teachers alike—sort of expected me to be the big dumb kid, and for a while I was content with being just that. For some reason, I also quickly became the target of the school bully, a greaser who had flunked twice. While most of the rest of us were twelve, he was fourteen, and he delighted in attacking boys who were smaller than he was. Even though I wasn't really smaller, the two years made a difference, and after I came home with a bloody nose the second time, my mom went to the school to talk to the principal. Two days later, I

these details help me to see you as a human who has experienced difficulty, too.

interesting. so it wasn't just physical size that he used to bully people.

Figure 2. Peer Review on Draft

nizing: “you tend to jump from one subject to another then return to the first and hop again.”

This comment reflected Jim’s major critique of the student author’s geo-biography draft, which had been sent to the student by e-mail following the class peer review session. In fact, the first draft was very good, which the peer reviewer had noted: “Excellent use of vocabulary and diction. You have a strong voice in your writing as well as a poetic one!” However, the fact that both instructor and peer respondent had pointed out organizational problems confirmed for the student author that he should address this issue in revision:

In order to revise and expand my draft, I need to mentally outline my geo-biography better, arranging each different subject in a manner that will bring smooth transitions to the next subject. Flash-forwards and flashbacks just might be the trick!

Not all students performed well as respondents, yet in comparing their performances with others and writing a formal reflection on them, nearly all students were able to take stock of their shortcomings. For example, the weakest respondent in the class on this first attempt wrote this:

I feel that going into the peer review I had the wrong view on what my job was when reviewing her paper. Now looking back I feel that I did not do a very good job at all when reviewing it. When first reading her geo-biography I was very impressed by her writing skills and the amount of detail she used when writing. When reading her paper I could almost visualize the scenes she was describing in my head. Therefore I only focused on the positive things she did and made comments mostly about how our schools were similar. I feel that I could’ve looked deeper and found things that could’ve helped her improve her paper. I hope that next time we do a peer review that I can do a much better job [...] Jim also was able

to notice the great use of detail that [the student author] used in her paper but along with the positive remarks he provided good suggestions for her to improve her paper, which I did not do.

In fact, this student did improve significantly as a reviewer in later sessions, evidence that this modeling and reflection upon performance with respect to the models enhanced students’ abilities to provide valuable feedback as peer reviewers.

Another bonus from such attention to peer review is that when students focus strongly on providing constructive feedback, they often realize that they can follow another student’s example in revising their own drafts, a point made by Herrington and Cadman above. In stating her plans for revising, one student said this:

I’ll include more visual details, to paint a better picture into my reader’s mind. I saw that when I read [another student’s] paper, I really had a fantastic picture in my mind when I read that opening paragraph of hers. I want to be able to do that throughout my entire paper.

Peer review can thus produce student learning that goes far beyond any one-directional flow of information; effectively mined, peer review can help student learners discern their own shortcomings and ways to surmount them without instructors’ instructions, an invaluable component of any classroom and one to which we return in the concluding section.

The importance of modeling cannot be over-emphasized, because through our peer review guidelines and the models (and modeling) that accompany them, we can confirm that all participants have a clear idea of what is expected. In his reflections on his performance, one student put this element in perspective: “Truthfully, this had been one of my first times participating in a peer review, since my school did not really do this, so I really tried hard to help my partner in any way possible.” Most likely students writing across the curriculum will have had a wide variety of previous experiences in

peer review—some good, some bad—making it all the more essential that instructors leveraging this approach have good models and plans for modeling in place.

Implementing Peer Review Across the Curriculum

Our initial scenario for peer review might have seemed somewhat contrived in its solicitation of a two-page single-spaced draft that would then be expanded to four. We chose this approach partly because we wanted students to approach early reviews more as problem solvers than as error catchers. (Instructors across the disciplines can devise other strategies, yet we urge them strongly to emphasize the intellectual teamwork of problem solving in moving from first draft to revision.) Later in the course, once students had mastered our approach, demands in peer review sessions changed. Each student had been required to compose an individualized editing checklist during the semester based on response from the instructor and writing mentor, and they all were advised to use it on their own before submitting drafts for review. A sample checklist, taken from a student's final e-portfolio, appears in Appendix A, and readers can see her representation of how she used this checklist during later stages of peer review by visiting her e-portfolio, linked to the online course syllabus. Not all of her editing suggestions were valid—illustrating another value of peer response mentioned by Herrington and Cadman (1991)—but most of them were. At the end of each assignment cycle, we devoted one homework assignment to out-of-class peer review that called on each student to apply his or her own individualized checklist to the penultimate drafts of two peers, and they managed this task quite effectively. They did not catch all the proofreading errors, but they did catch a good number of them. More importantly, they internalized proofreading practices to be carried over into other assignments and future courses.

If students have been equipped with a criterion-referenced rubric for writing assignments across the

disciplines, for example, they can be instructed to refer to it in their metacommentary. Peer reviewers can then respond to stated intentions that already focus directly on the assignment and expectations for outcomes. Our major categories of “aim, authorship, and audience” can include a lot of subcategories, whether it be including “standard edited English” as an important part of “authorship” or teaching the specifics “aims” of a lab report in a given discipline and written for a narrowly-defined “audience.” As Bazerman and colleagues (2005) observe,

It isn't that all good writing is the same, or even that a good writer can handle all kinds of writing; instead, writers use and must account for a set of essentials that are fairly stable even as they address the particulars of any writing situation. (p. 87)

The essentials of aim, authorship, and audience may well have been mastered by students who have completed introductory composition—or not. Regardless, the aims, audiences, and kinds of authorship expected in college courses vary dramatically from one discipline to another, and they require teaching this key component of the writing situation. Instructors who integrate peer review into their teaching practices can help students understand better the writing situation of the assignment and in the process will marshal a very valuable resource in helping students learn both form and content.

To that end, we also include a link to our own WAC program that includes a page reviewing rationales for peer review, samples of feedback forms that might be adapted to other situations, and alternative scenarios to the one we have presented for staging the teaching of review: http://www.mwp.hawaii.edu/resources/peer_review.htm. We also include Appendix B below, in which our scenario is presented in steps that can likewise be adapted. As noted, the setup is somewhat time-consuming and will require at least one full class session. But if this session has been carefully

planned and if peer review performances are documented and then used for further teaching and learning, the improved quality of writing and understanding of course concepts will make this time well spent. If the WAC movement has taught individual instructors anything, it is that writing in different disciplines can never be mastered by a student through the efforts of introductory composition alone. We are all writing instructors, no matter what our disciplines, and when we tap peer review to its fullest potential, we can help students become writing instructors, too. When they leave the academy for professional settings, they will encounter writing scenarios that are almost always highly collaborative and dependent upon many of the skills we teach through good peer review. Learning to conduct such review, whether as author or respondent, is a skill with lifelong value. ■■

References

- Anderson, T. (2010, July 4). Peer editing could use some revision. *Chronicle of Higher Education*.
- Artemeva, N., & Logie, S. (2002). Introducing engineering students to intellectual teamwork: The teaching and practice of peer feedback in the professional communication classroom. *Language and Learning Across the Disciplines*, 6, 62-87.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman and Company.
- Bazerman, C., Little, J., Bethel, L., Chavkin, T., Fouquette, D., & Garufis, J. (2005). *Reference guide to writing across the curriculum*. West Lafayette, IN: Parlor Press and WAC Clearinghouse.
- Cahill, L. (2005). Reflecting on peer review practices. In D. Roen, V. Pantoja, L. Yena, S. Miller, & E. Waggoner (Eds.), *Strategies for teaching first-year composition* (pp. 301-306). Urbana, IL: NCTE.
- Chin, P. W. U., & Hilgers, T. L. (2000). From corrector to collaborator: The range of instructor roles in writing-based natural and applied science classes. *Journal of Research in Science Teaching*, 37, 3-25.
- Cho, K., Schunn, C. D., & Charney, D. (2006). Commenting on writing: typology and perceived helpfulness of comments from novice peer reviewers and subject matter experts. *Written Communication*, 23, 260-294.
- Cho, K., Schunn, C. D., & Wilson, R. W. (2006). Validity and reliability of scaffolded peer assessment of writing from instructor and student perspectives. *Journal of Educational Psychology*, 98 (4), 891-901.
- Efkilides, A. (2006). Metacognition and affect: What can metacognitive experiences tell us about the learning process? *Educational Research Review*, 1, 3-14.
- Efkilides, A. (2001). Metacognitive experiences in problem solving: Metacognition, motivation, and self-regulation. In A. Efklides, J. Kuhl, & R. M. Sorrentino (Eds.), *Trends and prospects in motivation research* (pp. 297-323). Dordrecht, The Netherlands: Kluwer.
- Flavell, J. H. (1979). Metacognition and cognitive monitoring—A new era of cognitive-developmental inquiry. *American Psychologist*, 34, 906-911.
- Grimm, N. (1986). Improving students' responses to their peers' essays. *College Composition and Communication*, 37, 91-3.
- Herrington, A. J., & Cadman, D. (1991). Peer review and revising in an anthropology course: Lessons for learning. *College Composition and Communication*, 42, 184-199.
- Holt, M. (1992). The value of written peer criticism. *College Composition and Communication*, 43, 384-92.

- Patchan, M. M., Charney, D., & Schunn, C. D. (2009). A validation study of students' end comments: Comparing comments by students, a writing instructor, and a content instructor. *Journal of Writing Research*, 1 (2), 124-152.
- Paton, F. (2002). Approaches to productive peer review. In D. Roen, V. Pantoja, L. Yena, S. Miller, & E. Waggoner (Eds.), *Strategies for teaching first-year composition* (pp. 290-300). Urbana, IL: NCTE.
- profpeter (2010). Online comment in response to Anderson, T. (2010, July 4). Peer editing could use some revision. *Chronicle of Higher Education*.
- Purdue OWL. (n.d.) *Higher order concerns (HOCs) and lower order concerns (LOCs)*. Retrieved from <http://owl.english.purdue.edu/owl/resource/690/01/>
- Rose, M. (1985). The language of exclusion: Writing instruction at the university. *College English*, 47, 341-359.
- Salonen, P., Vauras, M., & Efklides, A. (2005). Social interaction: What can it tell us about metacognition and co-regulation in learning? *European Psychologist*, 10, 199-205.
- Spear, K. (1988). *Sharing writing: Peer response groups in English classes*. Portsmouth, NH: Heinemann/Boynton-Cook.
- Spigelman, C., & Grobman, L., eds. (2005). *On location: Theory and practice in classroom-based writing tutoring*. Logan, UT: Utah State University Press.
- Trautmann, N. (2009). Interactive learning through web-mediated peer review of student science reports. *Educational Technology Research and Development*, 57, 685-704.
- WAC clearinghouse teaching exchange. Peer review (n.d.). Retrieved from *The WAC Clearinghouse*. <http://wac.colostate.edu/teaching/index.cfm?category=6>
- Woods, P. (2002). Moving beyond "This is good" in peer response. In C. Moorea and P. O'Neill (Eds.), *Practice in context: Situating the work of writing teachers* (pp. 187-95). Urbana, IL: National Council of Teachers of English.

Appendix A. Student Editing Checklist

Composition I: Editing Checklist

✓	Potential Problem	How to Identify	Example
	Semicolon usage	Must separate two independent sentences.	Before correction: It's true that we have had problems in the past; settled our differences. After correction: It's true that we have had problems in the past; we have since settled our differences.
	The usage of "however"	Beginning of a sentence: Put a comma or any punctuation after the adverb. Middle of a sentence: Include a comma before AND after the adverb if the sentence is <i>dependent</i>. Include a semicolon before the adverb AND a comma after "however" if the sentence is <i>independent</i>.	Beginning of a sentence: However, half of the class did not study for the midterm. Dependent sentence: The rain, however, kept us indoors. Two independent sentence: There's a new movie coming out; however, I do not have enough money to go. WRONG: There is however, no real way of telling who started the fight.
	Colon usage	Used to introduce a series, a list, an appositive, and a quotation	Word: There is one thing we all need to survive: food. Phrase: One factor cannot be ignored: the bottom line. Clause: There's only one more question left unanswered: will time catch up with us in the end? List: On the first day of school the children were asked to bring: crayons, markers, colored pencils, notebooks, and a snack. Quotation: John F. Kennedy issued this stirring challenge: "Ask not what your country can do for you; ask what you can do for your country." WRONG: (1) She was in charge of: registration, cabin assignments, and camp clean up. (2) I play: football, soccer, and basketball. Hint: Do NOT use a colon after "such as".
	Comma usage	1. Use a comma to separate the elements in a series.	1. He hit the ball, dropped the bat, and ran to first base.

Appendix A. Student Editing Checklist (cont.)

		2. Use a comma + a conjunction to separate two <i>independent</i> clauses. 3. Use comma to set off introductory elements. 4. Use commas to set off parenthetical elements. 5. Use commas to separate coordinate adjectives. 6. Use commas to set off quoted elements. 7. Use commas to set off phrases that express contrast. 8. Use commas to avoid confusion. 9. Never use only one comma between a subject and its verb.	2. He didn't hit the ball, but he ran toward first base. 3. Running toward first base, he suddenly realized how stupid he looked. 4. Timmy, who is John's son, is not very good at baseball. 5. He is a tall, distinguished, good-looking businessman. 6. "The question is," she said, "whether you're ready to let go or not." 7. Some say the world will end in ice, not fire. 8. For most, the year is finished. WRONG: For most the year is finished. 9. Believing completely and positively in oneself is essential for success. (There is no need for a comma after "oneself" even if the reader may pause naturally.)
	I vs. me	"I" is a pronoun that must be the subject of a verb. "Me" is a pronoun that must be the object of a verb.	Correct: Georgia and I went to the beach today. Hint: Take out "Georgia and" and see if the sentence makes sense standing alone. (Me went to the beach today doesn't make sense.) Correct: Please come with Sarah and me to the park. Hint: Again, take out "Sarah and". (Please come with I to the park doesn't make sense.)
	Myself vs. me	Myself: "Myself" is a special object (direct or indirect), to be used only when the subject is you. Me: The word "me" is always a direct or indirect object (never a subject).	Correct example: The Captain handed the medals to my partner and <i>me</i>. Why it's not "myself": I can give a gift to "myself" since I am the one doing the giving. The Captain can never "give a gift to myself" since the subject is the Captain.
	Hyphen usage	1. Use a hyphen to join two or more words serving as a single adjective before a noun. 2. Use a hyphen with compound numbers. 3. Use a hyphen to avoid confusion or an awkward combination of letters. 4. Use a hyphen with the prefixes ex- (meaning former), self-, all-; with the suffix -elect; between a prefix and a capitalized word; and with figures or letters. 5. Use a hyphen to divide words at the end of a line if necessary, and make the break	1. a one-way street, chocolate-covered peanuts, well-known author 2. sixty-three, forty-six 3. re-sign a petition (vs. resign from a job) 4. ex-husband, self-assured, mid-September, all-included, mayor-elect, anti-American, t-shirt, pre-Civil War, mid-1980s 5. pref-er-ence, sell-ing, in-di-vid-u-al-ist

Appendix A. Student Editing Checklist (cont.)

		only between syllables. 6. For line breaks, divide already hyphenated words only at the hyphen. 7. For line breaks in words ending in -ing, if a single final consonant in the root word is doubled before the suffix, hyphenate between the consonants; otherwise, hyphenate at the suffix itself.	6. [Sentence] mass-produced. [Sentence] self-conscious. 7. plan-ning, run-ning, driv-ing, call-ing
	Apostrophe usage	1. To form possessives of nouns. 2. To show the omission of letters. 3. To indicate certain plurals of lowercase letters. DO NOT use apostrophes for possessive pronouns or for noun plurals.	1. The boy's hat= The hat that belongs to the boy 2. Don't= Do not 3. Nitta's mother constantly stressed minding one's p's and q's. Incorrect: his' book Correct: his book Incorrect: The group made it's decision. Correct: The group made its decision.
	The number dispute	Although usage varies, most people spell out numbers that can be expressed in one or two words and use figures for other numbers.	Words: over two pounds after thirty-one years eighty-three people Figures: after 126 days 2,384 bushels only \$31.20 3.28 liters

*Appendix B. Applying the 3 M's—Metacommentary, Modeling,
Multiple Technologies—to Support Peer Review of Writing*

Preparatory Work (one hour out-of-class preparation; 30 minutes of in-class time)

1. **Explain what meta-commentary is.** If possible, talk about how it functions in your own thinking as you prepare a report, an article, or a book for others' review.
2. **Show examples** from previous students. If you have none, you can see samples from students whose e-portfolios are linked from the online syllabus for the course, available at this URL:

[\[http://www.english.hawaii.edu/henry/100/2009/home.html\]](http://www.english.hawaii.edu/henry/100/2009/home.html), or use the excerpts from this report. You can also load examples to your online forum and require commentary from students to assure that they grasp the concept.
3. **Emphasize that this meta-commentary is a key part of the assignment.** Make sure that students understand the value of meta-commentary in conjunction with the written assignment and that it is *required*. You might show them an example of your own meta-commentary (which you will be completing in step 4), to give them an idea of how to elaborate on *aim, authorship, and audience* and to link these elaborations specifically to their writing assignment. Explain the strong connection between authorship and your evaluation rubric(s) so that students can key their commentary to it.
4. **Complete responses as the instructor and assistant** (a Writing Center tutor can probably fill this function) on each other's hard copy.
5. **Scan these responses to convert them to pdf files.** You will use at least one of them very strategically in teaching.
6. **Stage the instructional session.** Require students to bring their assignment with meta-commentary, printed out, to class for peer review.

*Appendix B. Applying the 3 M's—Metacommentary, Modeling,
Multiple Technologies—to Support Peer Review of Writing (cont.)*

In Class the Day of Review (one class session)

1. **Show your own responses.** Project the responses that you and your assistant have composed on a screen before students review for one another. Show them responses that you have written not only to the assignment but also to the meta-commentary itself, thus demonstrating the "conversation" that gets started through the process. Spend some time reviewing these artifacts, pointing out the way in which margins were filled and arrows were drawn. Talk a bit about "running notes" that the reviewer makes while reading as well as the short end commentary that is intended to speak to the Jimbout the draft as a whole. Allot a good ten or fifteen minutes to this part of preparation, so that everyone has a good sense of the task ahead.
2. **Task students with reading one another's meta-commentary,** followed by the draft. Then instruct them to provide as many helpful suggestions as possible to help the author enhance her or his authorship, aim, and audience as these essentials have been adapted for your course and for this assignment. (In a 50-minute class, students will have time to respond to one other draft; in a 75-minute class, they can respond to two.) With any remaining time, discuss the process as a class so as to see how and why any students might have been stymied. Let them know that the follow-up exercise after class should help.

*Appendix B. Applying the 3 M's—Metacommentary, Modeling,
Multiple Technologies—to Support Peer Review of Writing (cont.)*

After Class

1. **Upload the instructor's and assistant's responses to one another** to the web forum so that students can study them at their own pace. We highly recommend doing this only after students have tried their own hands after seeing the examples on screen, so that students do not feel the need to mimic the responses in the mode of "providing the right answer." Require students to scan their handwritten responses and upload them to the web forum.
2. **Require students to reflect on their response** by comparing it with those of at least one other classmate and the assistant, and posting this reflection in your web forum or otherwise distributing it via e-mail. A hidden advantage of this step is that the assistant's response will most likely offer not only praise but critique to the instructor in the name of helping him or her revise, thus enabling the instructor to emphasize the power of getting a peer's review to improve.
3. **Require students to write a plan to revise.** In our case, revision entailed expanding the initial draft to four pages, based on peer response. In other scenarios, the expected terms of revision could vary dramatically. Whatever your rationale, respond to the student's plan (very briefly!) to confirm it or suggest modifying it, all the while sending the signal of the value of a peer's review.
4. **Require students to revise the draft**, with revised meta-commentary that references the reviews. In our case we required expanding the draft so that even very accomplished writers could benefit from the peer review and so that weaker writers could see how they could contribute to a stronger writer's revision.

*Appendix B. Applying the 3 M's—Metacommentary, Modeling,
Multiple Technologies—to Support Peer Review of Writing (cont.)*

5. **Conduct one more round of peer review**, *out of class*, using the Comment function in the word processor. Require students to upload all copies to the web forum for all to access. (Additional resources for conducting online peer review can be found at Michigan State's WIDE research center: <http://wrac.msu.edu/portfolio/helping-users-use-eli/>). For instructors (and students) who want to maintain the look of pen-and-paper response, in which margins are filled and arrows are drawn, an increasingly popular tool is “iAnnotate” (<http://www.ajidev.com/iannotate/>)
6. **Require students to revise one more time** for a (provisional) grade, once again revising their meta-commentary. We have put "provisional" into parentheses to indicate our own approach to evaluation. In this class all students were compiling e-portfolios, and it was a part of grading procedures that they could return to any graded piece of writing and keep working on it, possibly improving their grade. In other contexts, instructors might prefer simply to stop at this step or to add a final round of peer *editing*, conducted out of class using the Comment function and making use of students' self-editing checklists.

Metacognition: Information Literacy and Web 2.0 as an Instructional Tool

Reabeka King

Abstract

Web 2.0's consistently evolving capabilities and features present a daunting task for educators as an instructional tool because of the educators' limited technological abilities or time constraints. Although Web 2.0 assists educators with guiding learners to complete tasks and supports the scaffolding of lessons to meet course objectives, there are more advanced pedagogical implications when using Web 2.0 as an instructional tool, such as fostering information literacy and metacognition. This article reviews information literacy standards and the use of Web 2.0 as an effective instructional tool to develop the metacognitive skills required to empower learners to use Web 2.0 responsibly, both in the classroom and on their own. Adaptations of Bloom's Digital Taxonomy and Salmon's chart of online competency are included in this article to serve as guides for supporting the metacognitive framework of information literacy and Web 2.0 in the educational setting.

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Keywords

Web 2.0, metacognition, information literacy

Introduction

Web 2.0 is an example of an online communication technology that has created new forms of literacy with its consistently evolving features and capabilities to produce and manipulate information (Baron, 1999). Web 2.0 is a term used to describe cultural trends like social networking, blogging, podcasting, and streaming media; it describes a landscape in which users control their online experience and influence the experiences of others (Funk, 2009). In response to the widespread adoption of online interactive environments and social networking opportunities, pedagogies have evolved that take advantage of Web 2.0's emphasis on creation and connectivity (McLoughlin & Lee, 2008).

Today, teaching has transitioned from Web 1.0 (which centered primarily on the simple retrieval of information) to the dynamic user-centered Web 2.0 (Pegrum, 2009). This transition has important cognitive and epistemological implications. Web 2.0 has influenced a generation of students that prefers speed and interactivity; it is a generation that not only wants to access infor-

mation, it also wants to disseminate it. Today's students are highly receptive to graphics rather than plain text and are socialized to function best when networked (Prensky, 2001a; Prensky, 2001b). This has prompted some educators to try to engage learners by using Web 2.0 technologies as instructional tools to decentralize the classroom, allowing learners to engage on their own territory. Many educators have had to adapt their learners' digital lifestyles in the classroom by supporting online self-representations and endorsing online community-building and collaboration to help enhance their language and literacy skills (Pegrum, 2009).

This essay takes a look at how Web 2.0 can shape the most fundamental of learning outcomes: metacognition, the higher level of thinking and processing information (Stolovich & Keeps, 2002). Many institutions have adopted information literacy as a key student learning outcome in recognition of today's information age. Students need to develop a high order of engagement with the content on the web beyond basic computer skills to utilize Web 2.0 effectively as a tool for making informed decisions and contributions.

This essay also correlates the information literacy standards established by the Association of College and Research Libraries (ACRL) with metacognitive activities. Included in the latter part of the essay is an adaptation of Andrew Churches' Bloom's Digital Taxonomy to link metacognitive activities associated with Web 2.0 in identifying educational objectives. This article proposes that a correlation among metacognition, Bloom's Digital Taxonomy, and information literacy standards can serve as an instructional guide for educators unsure about Web 2.0. An adaptation of Salmon's e-moderator online competencies is also included to represent learners' online competencies based on their online conduct. This rubric (in conjunction with Bloom's Digital Taxonomy and the ACRL standards) serves as a guide for the use of Web 2.0 resources in promoting metacognitive information literacy skills.

Web 2.0 and Education

The classroom is where students are guided and provided with the essential tools to develop important literacy skills. Web 2.0 in education is based on holistic elements, such as developing mental models and value systems as a result of life experiences and highly generalized learning principles. (Ford, 2008; Stolovich & Keeps, 2002). Web 2.0 in the classroom can be used to influence the social context of students' lives outside of the classroom (Cortes, 1986) and to develop responsible citizens who use online resources for self-empowerment and community building. Education has always been concerned with community and society as a whole; in the early days of the North America, the school was a "means of internal cohesion" to instill the community's religious beliefs and cohesion (Mitchell, 2005, p. 647). Today, Web 2.0 expands and redefines community; it can open up opportunities and communities if it is used responsibly. In this sense, Web 2.0 in education upholds a sense of cohesion and supports the objectives of society's demands.

In the classroom, students are able to internalize course content by using Web 2.0 to simulate the students' real life social experiences. Engagement is an essential part of the learning process in that it offers students opportunities to interact meaningfully with course content, and to provide and receive feedback from their peers. It is a method of developing self-conceptions that foster the transfer of the new knowledge and mental models to the social context outside of the classroom (Freeman & Freeman, 2001).

Web 2.0 pedagogies are student-centered approaches that in response to the cultural and literacy demands of the information age, educators have begun to alter their pedagogical approaches to align with their students' culture. Although Web 2.0 resources are familiar to today's learners, there are pedagogical implications beyond interactivity and student-centered engagement. As an instructional tool, Web 2.0 assists

educators with guiding learners to complete tasks and supports the scaffolding, or step-by-step structuring, of instructional tasks (see Vygotsky, 1978), to develop students' retention of course content in a familiar environment (Halverson, 2009).

Despite our students' familiarity with and avid use of technology, education plays an important role in the development of specific cognitive skills and fosters other essential competencies for the individual learner's effective use of Web 2.0. Reading and writing are two basic competencies; with the vast variety of information accumulated and disseminated with Web 2.0, the practice of reading and writing has evolved, developing new genres and modes that require additional metacognitive skills. Web 2.0 has influenced society with a "new way of communicating, making meaning, being understood, expressing a sense of self and connecting with others. Its growing range of technologies provides us with choices that allow for sophisticated visual, auditory, graphic and digital representation which require new understanding of how messages are sent, received, stored, replicated and reshaped" (Baguley, Pullen, & Short, 2010, p. 4). In turn, it can be argued that the new generation of learners' adaptation of technology into their culture has affected the way they think and process information (Prensky, 2001a).

When educators incorporate Web 2.0 within their classrooms, an opportunity is created to formalize students' existing social online behavior and practices and encourage them to enhancing their thinking processes. Students must develop the information-processing skills necessary to constructively contribute and effectively make use of the rapid exchange of information via Web 2.0. These skills must foster students' ability to transfer knowledge and consistently deconstruct ideas to develop new knowledge (Ford, 2008). This is the basic principle of metacognition—the ability to transfer and build knowledge in other areas during the learning process. Metacognition entails the ability to control

how one learns to expand one's knowledge base (Ford, 2008). The student plans how to approach the task at hand and selects various skills to execute the task by making associations with prior knowledge. As they complete their tasks, they obtain new knowledge and adjust prior analogies and mental images. At this stage, the students continue the cycle of the following metacognitive activities until the task is fully completed: planning, strategizing, making connections with prior knowledge, monitoring, regulating, and evaluating their own progress (Flavell, 1979; Sternberg, 1998; Stolovich & Keeps, 2002).

Metacognitive development is most effective when students are motivated by information that interests them or is facilitated within a familiar or stimulating instructional environment. With Web 2.0 resources, educators now can foster learning situations that reflect both the curriculum and individual learning styles (Beard, 2008) and that "foster[s] interaction in which learners share responsibility for their own learning" (Artzt & Armour-Thomas, 1998, p. 21). This is an effective method for the development of autonomous and versatile learners who are aware of their own limitations and learning process (Ford, 2008). The ultimate goal of Web 2.0-based education, then, is to influence students to become aware of their own learning styles and capabilities (versatility) and minimize their dependence on pedagogical mediation (autonomy) and develop conscious strategies (metacognition) (Ford, 2008).

Web 2.0 as Part of the Curriculum

Most new communication technologies go through a number of stages, starting with a limited range of communication opportunities (such as the presentational model of Web 1.0) to the transactional opportunities of Web 2.0. At the stage when Web 2.0 became accessible and functional across the general population, a new literacy spread. No longer restricted by Web 1.0's pas-

sive modes of communication, Web 2.0 has successfully created new forms of knowledge creation and connectivity, such as wikis and interactive blogs (Baron, 1999). This has affected how users analyze, gather, use, and disseminate information, thus establishing information literacy as a required key skill for twenty-first century students.

Literacy has a variety of definitions and meanings, almost all of which are associated with the most positive aspects of community, and encompasses a wide variety of attitudes, beliefs and power relations between individuals and groups. Functional literacy is the ability to read and write and the ability to use literacy for practical purposes (Blake & Blake, 2005). The most common meaning of literacy today centers on the basic ability to read and write text at a functional level (Baguley, Pullen, & Short, 2010). The level of these abilities evolve as the demands and culture in society evolves; social and cultural conventions shape a particular literacy (Utsi & Lowyck, 2005). While years ago local expectations defined literacy standards, today's global economy, which is also known as the "knowledge or innovation" economy, has broadened the standards of literacy with the same evolving consistency as the new transactional tools on Web 2.0.

The ability to read and write text has evolved to the ability to read and write information (Baguley, Pullen, & Short, 2010). In Web 2.0 environments, information can be produced in diverse media and be redefined as hypertext—online materials that are linked together by individual bits of text or whole documents. These opportunities have shaped the ways we read, write, and teach, as well as how we conceive of text itself (Charney, 1994). Web 2.0 has created a new form of literacy, arising out of such sources as 140-character long tweets and collaboratively authored wikis. The information published on Web 2.0 enables users to control their online experience and influence the experiences of others. As chief information architects,

users have independently developed habits that can be enhanced through educational mediations.

Information literacy has been described as a broad range of information processing skills (Utsi & Lowyck, 2005). Along with learning course content, information literacy is also the desired learning outcome that entails metacognitive activities. According to the Association of College and Research Libraries (2000), information literacy includes the ability to:

- » 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. (ACRL, 2000, p. 2-3)

Largely due to the impact of Web 2.0, information literacy has become an integral part of the curriculum, in which every subject must incorporate information literacy as a key competency. Since Web 2.0 is consistently evolving, it is the ideal classroom tool in that it grants students the "opportunity for self-directed learning: it encourages them to become engaged through the use of a wide variety of information sources to expand their knowledge, ask informed questions, and sharpen their critical thinking for still further self-directed learning" (ACRL, 2000, p. 9).

As stakeholders of information literacy, academic librarians organized through the Association of College and Research Libraries have established information literacy standards that have been adapted by higher educational institutions to support the ability of educators to enhance the information needs of higher education (ACRL, 2011). Table 1 couples correspond-

ing metacognitive activities with ACRL's information literacy standards when using Web 2.0. Educators are encouraged to

use these standards as indicators of students' information literacy development, and in turn, learners learn to gain control over how they interact with information, sensitizing them to the need to develop a metacognitive approach to learning, making them conscious of the explicit actions required for gathering, analyzing, and using information. (ACRL, 2000, p. 6)

Since the gathering, analysis, and use of information varies from discipline to discipline, educators can apply these standards within the context of their course content.

Table 2, which is an adaptation of Andrew Churches' Bloom's Digital Taxonomy, links cognitive processes with Web 2.0 tools. This table enables teachers and students to monitor different cognitive strate-

gies with Web 2.0 tools. Andrew Churches' Digital Taxonomy correlates the different Web 2.0 tools and features with cognitive skills charted in the original Bloom's Taxonomy Higher Thinking Order. Churches uses transitive verbs to represent the active cognitive processes when using Web 2.0 tools as opposed to Bloom's Taxonomy, which uses nouns to classify the thinking processes required by the activity; interestingly, this shift in language use can be regarded as indicative of how Web 2.0 inspires active cognitive processes. In Web 2.0 classrooms, students are able to refine and enhance such cognitive processes. The simpler the Web 2.0 function, the lower the thinking skill; when using this chart, educators can discern and scale instructional tasks to develop students' metacognitive skills. Both Tables 1 and 2 overlap because metacognition refers to the higher order of thinking, in which learners control the cognitive process in their learning (Ford, 2008). These tables highlight the metacognitive

Metacognitive activity	ACRL Information Literacy Standards
Planning	Defines and articulates the need for information or platform to disseminate information
Selecting	Student accesses and contributes appropriate information needed effectively and efficiently
Connecting	Student evaluates information and its source critically and incorporates selected information into his or her knowledge base and value system
Regulating	Student, individually or as a member of a group, uses and contributes information effectively to accomplish a specific purpose
Evaluating	Student understands many of the ethical, legal and socio-economic issues surrounding information and information technology

Table 1 – Metacognitive activities synchronous with information literacy standards

Bloom's Taxonomy	Bloom's Revised Taxonomy		Web 2.0 Tool Capabilities
	Higher Order Thinking Skills	Terms	
Evaluation	Creating	Designing, constructing, planning, producing, inventing, devising, making	Programming, filming, animating, videocasting, podcasting, mixing, and remixing
Synthesis	Evaluating	Checking, hypothesizing, critiquing, experimenting, judging, testing, detecting, monitoring, commenting, reviewing, posting, moderating, collaborating, networking, reflecting, validating	Debate and paneling (i.e. discussion boards), report (i.e. wiki), evaluation, investigate (online tools), verdict, conclusion, persuasive speech, commenting, moderating, reviewing, posting, collaborating, networking
Analysis	Analyzing	Comparing, organizing, deconstructing, attributing, outlining, finding, structuring, integrating	Survey, database, abstract, relationship mind maps, report, graph, spreadsheet, checklist, chart, mashing (several data sources into a single resource), linking
Application	Applying	Implementing, carrying out, using, executing	Running and operating, playing, uploading and sharing, hacking, editing, illustrate, simulate, sculpt and demonstrate, present, interview, perform
Comprehension	Understanding	Interpreting, summarizing, inferring, paraphrasing, classifying, comparing, explaining, exemplifying	Advanced and Boolean Searching, Blog Journaling, Categorizing/ Tagging (i.e classifying files or sites), commenting/ annotate,
Knowledge	Remembering	Recognizing, listing, describing, identifying, retrieving, naming, locating, finding	Bookmarking, favoriting, social networking, social bookmarking (i.e. tagging), searching (i.e. googling)
Lower Order Thinking Skills			

Table 2 – Web 2.0 tool capabilities according to Bloom's Digital Taxonomy

activities in play when students use Web 2.0 to foster their information literacy skills.

Metacognition: The Desired Learning Outcome

As a prerequisite for success in today's connected and transactional world, educators should aim to foster learner autonomy, which makes students more independent and self-regulating in their education, and in turn enhances their abilities to increase their metacognitive knowledge and skills (Ford, 2008). A Web 2.0 student-centered approach motivates and enables students to take responsibility for their education, allowing them to determine whether they understand the content, whether the content is what they need, and what they still need to know and learn (Valenti, 2008). Educators are the agents who provide learners with guidance to develop the essential skills to become successful autonomous learners.

When using Web 2.0, the objective of education is not to make the students consistently reproduce the same mechanical strategies without variation (Ford, 2008; Stolovich & Keeps, 2002). Similarly, providing students with general instruction about Web 2.0 is not helpful because instruction is not connected to the specifics that are intended to be taught (Ford, 2008; Stolovich & Keeps, 2008). It is difficult to make broad assumptions about Web 2.0 pedagogies because they are constantly evolving. The main goal of Web 2.0 pedagogies, then, is to emphasize general mental models and value systems that can be applied in many different situations (Ford, 2008; Stolovich & Keeps, 2002). The broader function of Web 2.0 pedagogies is that when a student learns, the transformative outcomes are desirable for both the learner and society (Stolovich & Keeps, 2002).

While educators do not have to incorporate all of the options associated with Web 2.0, they should organize and administer stratified systems of opportunity and access to raise the literacy stakes in struggles for

competitive advantage (Brandt, 1998). When teachers embrace Web 2.0 pedagogies and implement them creatively in the classroom, they are applying a student-centered approach to developing students' information literacy and metacognitive skills in light of the information age. However, many educators are intimidated by Web 2.0 because it is constantly evolving and its rush of new features may make it hard for them to stay current.

Web 2.0 pedagogies are based on the premise that teachers are mediators who help students solve problems and find new solutions. As teachers sequence learning opportunities to promote the students' information literacy skills, students can contribute to the planning of the instructional tasks by recommending Web 2.0 interfaces that would be useful to enhance and support the educational process (Freeman & Freeman, 2001; Pegrum, 2009). Ideally, teachers should participate with their students as they try out different Web 2.0 tools. With modest goals and the occasional use of Web 2.0 tools, the educators and students can share critical learning situations together. Overall, educators should focus on the key learning outcome of developing metacognitive skills so that their students can become more information-literate.

The rapid pace of Web 2.0 development requires that teachers and students filter obsolete information very fast. This can cause information overload, in which learners and educators are unable to complete the tasks at hand or procrastinate because they have experienced cognitive overload and cannot process any more information (Benito-Ruiz, 2009). This, coupled with focusing on metacognitive values, can cause a lot of over-thinking. In the classroom, time management and carefully sequenced lessons are critical, as is monitoring students' metacognitive activities (Sternberg, 1998). For educators not familiar with Web 2.0, Table 3 is a rubric that serves as a guide for assessing and monitoring learners' conduct and competencies with using Web

Quality/ Characteristic	1. Confident	2. Constructive	3. Developmental	4. Facilitating	5. Knowledge-Sharing	6. Creative
Understanding of online process	Flexible in approaches to learning. Receptive to the challenge of online learning	Able to build online trust & purpose with others. Understands role in online learning & role as part of online groups	Participates in discussions, references and makes inferences with course content and prior knowledge, works through challenges, & monitors understanding	Knows how to keep up with pace of discussions & use time online	Able to explore ideas, develop arguments, make valuable contributions to threads	Able to adjust learning style to use range of approaches from structured activities (e-tivities)
Technical skills	Operational understanding of Web 2.0 tool; able to access the Internet	Able to identify basic structures of Web 2.0 tools as potential for learning	Knows how to use special features of software. Uses Web 2.0 tools productively without consuming inordinate amounts of personal time	Able to use special features of software to explore and build knowledge	Able to make links between online & other features of learning programs	Able to use Web 2.0 facilities to create & manipulate information & to generate an online learning environment; able to use alternative software & platforms
Online communication skills	Courteous & respectful in online (written) communication, able to keep up with pace & use time appropriately	Able to write concise, energizing, and informative online messages	Able to engage online with people (not the machine or the software), be appropriately "visible" online, and meet the educational goals of the forum.	Able to interact through e-mail & achieve interaction with others	Able to value diversity with cultural sensitivity, explore differences & meanings	Able to communicate comfortably without instructional cues
Content expertise	Willing to share and contribute to knowledge & experience	Able to make sound contributions	Able to debate by responding to intriguing questions and comments	Accountable for participation & contributions	Able to value diversity with cultural sensitivity, explore differences & meanings	Able to enliven conferences through use of multimedia & electronic resources; and able to build on ideas
Personal Characteristics	Determined & motivated to participate	Able to establish an online identity	Able to follow new educational contexts and learning methods; adapts to audiences & roles	Shows sensitivity to online relationships & communication	Shows a positive attitude, commitment & enthusiasm for online learning	Knows how to participate as an active member in relevant online learning community

Table 3 – Rubric for assessing learners' Web 2.0 conduct and capabilities

2.0. This table is an adaptation of Salmon's key competencies for e-moderators, which was originally created as a guide for teachers facilitating instruction with Web 2.0 writing tools (Salmon, 2001; Sturm, Kennell, McBride, & Kelly, 2009). In this context, the rubric has been modified to monitor the learners' online conduct as a representation of their metacognitive and information literacy skills.

Since the goal of metacognition is to promote self-directed learning, educators function as guides who introduce the proper uses of Web 2.0 resources and create situations in which they learn about Web 2.0 with their students. The educators' responsibility in guiding their students is to enhance their cognitive skills and teach them to think critically about information in various formats, make responsible decisions, and develop productive representations of themselves when using Web 2.0. The overall goal of Web 2.0 pedagogies is to promote independent thought and autonomous learning that filters and controls the amount of information that we accrue and share (Benito-Ruiz, 2009).

Conclusion

Web 2.0 is a dynamic instructional tool that supports learners' information literacy skills which relies on metacognitive activities. Educators have to take on the role as mediators and guides in the instructional setting to prepare learners for the autonomous use of Web 2.0. When introduced to rubrics and learning objectives of the Web 2.0 tools, educators and learners are able to monitor the learners' information literacy and metacognitive development.

As technology evolves, so will the standards and classifications of literacy. Web 2.0 is currently transitioning to Web 3.0, which is less user-centered and more technology centered. This transition will also affect how information is read, written, and distributed, and, ultimately, how educators will teach. Until then, this article serves as guide to assist educators with using

Web 2.0 to support educational objectives and assess learners' metacognitive activity. ■■

References

- Artzt, A. F., & Amour-Thomas, E. (1998). Mathematics teaching as problem solving: A framework for studying teacher metacognition underlying instructional practice in mathematics. *Instruction Science*, 26 (1-2), 5-25.
- Association of College and Research Libraries: American Library Association (2000). Information literacy competency standards for higher education. Retrieved from: <http://www.ala.org/ala/mgrps/divs/acrl/standards/informationliteracycompetency.cfm>
- Association of College and Research Libraries: American Library Association (2011). What is the Association of College and Research Libraries? Retrieved from <http://www.ala.org/ala/mgrps/divs/acrl/about/whatisacrl/index.cfm>
- Baguley, M., Pullen, D. L., & Short, M. (2010). Multiliteracies and the New World Order. In D.L. Pullen & D.R. Cole (Eds.) *Multiliteracies and technology enhanced education: Social practice and the global classroom* (pp. 1-17). Hershey, PA: Information Science Reference.
- Baron, D. (1999). From pencils to pixels: The stages of literacy technologies. In Gail E. Hawisher & Cynthia Selfe (Eds.). *Pedagogies and twenty-first century technologies* (pp. 15-33). Logan, UT: Utah State University Press.
- Beard, J., & Dale, P. (2008). Redesigning services for the net-gen and beyond: A holistic review of pedagogy, resource and learning spaces. *New Review of Academic Librarianship*, 14, 99-114.

- Benito-Ruiz, E. (2009). Infoxiation 2.0. In M. Thomas (Ed.). *Handbook of research on Web 2.0 and second language learning* (pp. 60-79). Hershey, PA: Information Science Reference.
- Blackburn, J. M. (2006). Metacognition. In *Encyclopedia of Educational Leadership and Administration* (Vol. 2, pp. 663-664). Thousand Oaks, CA: Sage Reference.
- Blake, B. E., & Blake, R. W. (2005). *Literacy: Primer*. New York: Peter Lang Publishing.
- Brandt, D. (1998). Sponsors of literacy. *College Composition and Communication*, 49(2), 165-85.
- Charney, D. (1994). The effect of hypertext on process of reading and writing. In C. Self and S. Hillgoss (Eds). *Literacy and computers: The complications of teaching and learning with technology* (pp. 238-263). New York: MLA.
- Churches, A. (2008, April 1). Bloom's Taxonomy blooms digitally. *Tech Learning*. Retrieved from <http://www.techlearning.com/showArticle.php?articleID=196605124>
- Cortes, C. (1986). The education of language minority students: A contextual interaction model. In D. Holt (Ed). *Beyond language: Social and cultural factors in schooling language minority students* (pp. 3-33). Los Angeles, CA: California State University Evaluation, Dissemination and Assessment Center.
- Everson, H.T., & Tobias, S. (1998). The ability to estimate knowledge and performance in college: A metacognitive analysis. *Instructional Science*, 26, 65-79.
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive developmental inquiry. *American Psychologist*, 34(10), 906-911.
- Ford, N. (2008). *Web-based learning through educational informatics: Information science meets educational computing*. Hershey, PA: Information Science Publishing.
- Freeman, D. E., & Freeman, Y. S. (2001). *Between worlds: Access to second language acquisition*. Portsmouth, NH: Heinemann.
- Funk, T. (2008). *Web 2.0 and beyond: Understanding the new online business models, trends and technologies*. Westport, CT: Pagers Publishers.
- Halverson, A. (2009). Social networking sites and critical language learning. In M. Thomas (Ed.), *Handbook of research on Web 2.0 and second language learning* (pp. 20 -41). Hershey, PA: Information Science Reference.
- McLoughlin, C., & Lee, M. (2008). Future learning landscapes: Transforming pedagogy through social software. *Innovate*, 4 (5), Retrieved from <http://www.innovateonline.info>
- Mitchell, T. R. (2005). Education: North America. In M. C. Horowitz (Ed.), *New dictionary of the history of ideas* (Vol. 2, pp. 647-649). Detroit: Charles Scribner's Sons.
- Pegrum, M. (2009). Communication networking and linguistic mashups on Web 2.0. In M. Thomas (Ed.). *Handbook of research on Web 2.0 and second language learning* (pp. 20-41). Hershey, PA: Information Science Reference.
- Prensky, M. (2001a, September/October). Digital natives, digital immigrants. *On the Horizon*, 9 (5), 1-6.
- Prensky, M. (2001b, November/December). Digital natives, digital immigrants, part II: Do they really think differently?" *On the Horizon*, 9 (6), 1-6.
- Salmon, G. (2003). *E-moderating: The key to teaching and learning online*. London: Kogan Page.
- Sternberg, R. J. (1998). Metacognition, abilities and developing expertise: What makes an expert student? *Instructional Science*, 26, 127-140.

- Stolovich, H. D., & Keeps, Erica J. (2002). *Telling ain't training*. Alexandria, VA: American Society for Training and Development.
- Sturm, M., Kennell, T., McBride, R., & Kelly, M. (2009). The pedagogical implications of web 2.0. In M. Thomas (Ed.), *Handbook of research on Web 2.0 and second language learning* (pp.367- 84). Hershey, PA: Information Science Reference.
- Utsi, S., & Lowyck, J. (2005). Digital literacy and the position of the end-user. In the *Encyclopedia of Information Science and Technology* (pp. 875-878).
- Valenti, S., Falsetto, C., Ramazzotti, S., & Tommaso, L. (2008). Reshaping the structure of learning objects the light of metacognition. In L. Sault (Ed.), *Web-based education and pedagogy technologies: Solutions for learning applications* (pp. 226-246). Hershey, PA: IGI Publishing.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Students in the Archives: A Short Report on a Significant Learning Experience

Sarah Berry

Abstract

Archival research offers students a chance to engage actively with their local community through hands-on primary-source investigation and assessment. This report describes an archival research project in a 200-level course as a significant learning experience that integrates research, writing, revision, and collaboration processes ultimately to produce a class-authored document for web publication. The project has four phases—primary text reading and discussion; archival research and collaborative writing; collaborative assessment of all research findings; and individual student assessment of the class document as a whole. Students develop skills in assessing primary documents, solving research problems, composing collaboratively, citing sources, and understanding texts in their disciplinary contexts. This project is appropriate for lower-level courses in the humanities, social sciences, and natural sciences. I describe the four phases, discuss the learning outcomes of each phase, and offer suggestions for adapting archival research projects across the disciplines.

Keywords

significant learning experiences, archives, primary research, collaborative learning, collaborative composition

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Introduction

Replete with manuscripts, objects, ephemera, images, and data collections, archives hold a wealth of primary material for investigation. Instructors of any lower-level course can design archival research and writing projects that stimulate student engagement with disciplinary concepts. Such projects can spark a level of inquisitive, independent learning in students that carries throughout the course and beyond. As an opportunity for sustained inquiry, primary research, and composition resulting in a concrete, polished product available to an audience outside the class, archival work also gives students an active role in constructing knowledge that they can contribute to their own community. These benefits, when combined with teamwork experience, help to prepare them as citizens, professionals, and lifelong learners.

This report describes an archival research project in a 200-level interdis-

disciplinary English and Pre-Health Professions course. Acting as original investigators of primary materials archived at the Geneva (NY) Historical Society, students expanded our knowledge about Elizabeth Blackwell, who, in 1848, became the first woman to earn a medical degree in the United States. On our college Web site (Students of English 213, 2009a, 2009b), they presented analysis of their findings in a collaboratively authored cultural reception biography of the famous doctor spanning the past 160 years.

Although I designed this cultural history project from a humanities perspective, I would argue that it fosters significant learning in the social and natural sciences as well. Science courses, for example, could make use of data collections. In the social sciences, qualitative and quantitative analysis may be possible with the materials in one collection. Alternatively, prompting inquiry into the history of a scientific theory or the biography of a key individual in a cultural movement significantly expands students' disciplinary knowledge by tracing developments and situating them within a social framework. Across the disciplines, experience with both research and mastery of writing conventions is enhanced when students are original investigators of raw data or unpublished documents. Primary sources help students interact with their immediate collegiate and local communities, making the course material alive and connecting it to them in ways that expand their education beyond classroom walls and textbook pages. When implemented in introductory and lower-level courses, archival projects may lead to further engagement in the discipline and more confidence in writing, thus preparing learners for upper-level, graduate, or professional work.

Collaborative archival research on a course topic creates learning opportunities at multiple levels that differ from traditional research and writing processes. Newer approaches to college teaching that have emerged in recent decades emphasize experiential

learning and collaboration, including active learning (Bonwell & Eisen, 1991), cooperative learning (Millis & Cottell, 1998), Learner-Centered Teaching (Weimer, 2002), and significant learning experiences (Fink, 2003). While each approach features a distinct pedagogical theory and recommends specific practices, they all enable students to connect course content with their own lives and to acquire habits of lifelong, self-directed learning.

This project meets the goals of what L. Dee Fink (2003) theorizes as significant learning experiences, in which students take the role of active producers and transformers of knowledge. Archival projects are productive learning experiences because primary research builds in the opportunity to create new knowledge in any discipline. In this project, students worked with nontraditional sources such as ephemera, letters, manuscripts, and images, all of which represent Blackwell differently in a given period. Students responded to these atypical and previously unassessed sources by relying on their own knowledge of Blackwell's life through reading her memoir and, further, by developing decision-making and interpretation skills while they worked. Assignments in biography and cultural reception history teach skills necessary for the evaluation of primary materials that differ from and complement those required in secondary-source research, which directs learner attention to other writers' ideas and expertise. This project also balances the collegiate emphasis on individual research and writing by encouraging development of skills in cooperative learning and power sharing. And while student research-based writing typically reaches only the academic community, this assignment challenges students to think about audience and the uses of research in new ways when they publish their work in the public domain. Learners become experts on their primary research and develop public communication skills that can help prepare them for both upper-level study and work outside the academy.

Perhaps the most important outcome of significant learning is that it can substantively change students' outlooks, even after the course ends, thus enhancing their individual lives and community participation (Fink, 2003). This project strengthened the class as a learning community and also stimulated students' individual awareness, reflectiveness, and investment in understanding gender and the medical profession—historically and in their own present-day experience—in ways that the standard pre-project reading, writing, and discussion did not. I offer a detailed description of the course and its archival project as a case study and suggest ways in which the project could be adapted to other disciplines and course goals.

Course Context

Nineteenth-Century American Literature and Women Healers, a 200-level class of 20, was conducted through discussion in whole-class, small-group, and online formats. The course emphasized critical thinking and writing through daily reading responses and weekly groups of Wiki posts in which writers responded to each other's questions and offered original analysis. These writing and discussion practices cultivated classroom dialogue on relevant materials and concepts and prepared students for the sustained project on Dr. Blackwell.

The course investigated relationships among literature and modes of healing across a diverse array of U. S. American cultures using an intersectional inquiry approach. Emerging from feminist theory, intersectionality treats identity as layered and attends to the ways in which it exists simultaneously within systems of oppression and privilege (Jones, 2009). Through reading and discussing novels, short stories, *cuentos* (Spanish-American folktales with a moral), poems, chants, songs, and autobiography, we examined the ways in which healing traditions intersect with literary forms in specific cultural contexts and the ways in which healing and literature are shaped

by and also help to shape their cultures. We paid special attention to differences in women's roles as healers across cultures and over time. Multidisciplinarity was represented not only by course content but also by the students themselves, who were English, Pre-Health Professions, and Women's Studies majors.

Taking advantage of local history, the archival project focused on Elizabeth Blackwell, who earned her medical degree at Geneva College, the precursor of Hobart College. I situated her memoir about her struggle to gain a biomedical education within a long tradition of women's healing work in diverse American cultures—European-American nonprofessional and “irregular” traditions, various Native American peoples' practices, African-American conjure, and Latina-American *curanderismo*—in order to demonstrate that professional medicine has been only one historically significant mode of healing work among women. This context brought to the fore Blackwell's struggle to gain access to the institution of biomedicine that excluded women from education, licensing, and practice during its self-formation as a profession in the nineteenth century. The goal for studying Blackwell at the archives was to produce a deep analysis of the shifting representations of her identity over time—for example, as a rebel or a pioneer. Because of her iconic status, plenty of narratives about her have been written over the past 160 years, allowing students to discover for themselves the meaning of her identity over changing social history frameworks. Thus, the assignment positioned students to gain deep insight into Blackwell's identity as constructed rather than inherent. A constructivist approach such as this creates a more significant learning experience than does retrieving and rehearsing commonly available facts (Fink, 2003).

We began by reading Blackwell's (2005) memoir, *Pioneer Work in Opening the Medical Profession to Women*, and continued with archival research at the Geneva (New York) Historical Society, where stu-

dents examined multiple documents and ephemera about Blackwell. Their products ultimately included a cultural biography of Blackwell and an annotated bibliography—both collaborative—and a paragraph by each student assessing these collective findings. Throughout the project, students were enthusiastic, and they collaborated in consistently productive ways. Their skills in rhetorical analysis, writing, and documentation uniformly improved. By the end of the course, the class had created new knowledge about Blackwell and had gained awareness of how her life was not only an exceptional historical case but also an integral part of their own history.

Project Components

Reading and Discussion

Course inquiry began with a close look at women's traditional work as healers prior to Blackwell's era. Attention to women's former authority in birthing and healthcare provided context for understanding the disempowerment of women during the rise of the male-dominated medical profession in the nineteenth century. Before we read Blackwell's (2005) memoir, then, we had dispelled the assumption that before the twentieth century women were always and uniformly disempowered. With a good grasp of the ways in which gender roles fluctuate over time, students were sensitized to some more specific gender constraints that Blackwell faced.

Students were surprised by two implications of gender-role expectations. First, Blackwell (2005) projects an unorthodox femininity in her memoir. For example, she withholds descriptions of her emotions, reports an aversion to courting, and remains silent about her later experience as a mother. Second, she repeatedly illustrates other women's opposition to her medical education and professional activities. As students grappled with their surprise at—and initial dislike of—her self-portrayal, their own internalized

gender expectations were laid out for examination. As one student explained, "Blackwell was unlikeable, but in an interesting way." Blackwell's atypical femininity as well as other women's opposition to Blackwell's efforts piqued their interest. The memoir discussion opened up an intellectual space for students to begin to understand gender in constructivist terms, a challenging theoretical view that they grasped for themselves with increasing depth and nuance during their archival research and writing.

Encountering the unexpected in the first day of discussing *Pioneer Work* (Blackwell, 2005) also provided an opening to question assumptions about objectivity in autobiography. In the second discussion, we generated a list of human and cultural factors that mitigate factuality in nonfiction life-writing. Students were then able to make more sophisticated claims about Blackwell's self-representation choices, thus pushing their thinking beyond their initial reader responses. We also began inquiry into aspects of rhetoric by identifying Blackwell's potential audience and her purpose in writing a memoir. Finally, we deepened language analysis, discussing, for instance, the linguistic and cultural implications of Blackwell claiming "pioneer" status for herself. Discussion was lively, and contributions were well-distributed among all twenty students. Pre-research reading prepares students for their own investigation of primary material. While this memoir produced opportunities to discuss literary conventions and rhetoric, a text in any course-appropriate genre is useful to open up questions about the project goal, whether it is learning about investigative methods, data collection and analysis, development of theories, discoveries, or social change.

In the Archives

During two class periods, we visited the archives of the Geneva Historical Society, a short walk from campus. The goal of archival work was to continue to examine Blackwell's cultural significance by turning to other writers' constructions of the woman and her

achievements over the past 160 years. The assignment asked pairs of students to examine archival documents and images, to write a two- to three-paragraph segment to contribute to the class's biography, and to prepare a segment of annotated bibliography. After the paragraphs from each pair were assembled into a chronological biography, each student composed a paragraph assessing what the class biography revealed to her about Blackwell and American culture. Other options for collaborative pieces might include, for example, assembling a chronology of a scientific practice or a composite report of the psychological traits or marriage patterns of a certain demographic group. Individual assessment of the bigger picture can be as brief as a paragraph or as long as an essay.

To begin the investigation, each self-selecting pair received a folder of material (manuscripts, letters, short books, and ephemera such as programs, news clippings, pamphlets, and advertisements) that I had skimmed and pre-selected for relevance and analysis potential. Each folder contained materials from the 1840s to 1850s or from the 1930s to the present, and each pair worked with roughly a decade's worth of materials, allowing them to situate the contents in distinct moments in American history.

Students' absorption in the archival material was immediately apparent. As primary source investigators, students discovered discrepancies and conflicts between their archival documents and Blackwell's (2005) own claims in *Pioneer Work*. When new questions arose from these research challenges, their interest peaked. One student, puzzling over contradictory information, gleefully exclaimed, "I feel like a detective!" As they worked, I visited each pair to help with logistical questions, but students also consulted with each other to address the meanings, limits, and problems presented by the materials in their folder. Because I was unfamiliar with their materials, they developed their own expertise. Encountering both connections and discrepancies among materials promotes problem-solving

in any discipline. Further, it creates an opportunity for students to learn discipline-specific practices of dealing with informational or data inconsistency.

Evaluation of primary sources also necessitated genuine collaboration. Each pair divided materials, negotiated with each other over sharing tasks, communicated on both logistics and ideas, and developed analysis strategies as a team. While examining materials, students honed self-directed note-taking skills as they prioritized what information would be most useful to fulfill the writing prompt. As they worked, students recorded bibliographic data. They annotated each full citation with a two-sentence description of the content of the piece, and I compiled their citations into a bibliography. Learning to negotiate with each other without instructor mediation, as well as taking ownership of interpretation of materials, boosted students' ability to self-direct, to work with others, and to produce new knowledge.

The writing prompt asked students to think about representations of Blackwell (2005) in relation to socially determined gender perceptions over time. Applying skills for rhetorical inquiry that began during discussion of *Pioneer Work*, each pair co-authored two to three structured paragraphs. Writers briefly described their materials and then analyzed them in depth, addressing the following questions: How is Blackwell represented or constructed? What is the audience and purpose of the piece(s), and how might these factors shape the writer's representation of her? What are characteristics of the time period in which the materials were written that could account for this particular representation of Blackwell? Writers were asked to support all critical claims with evidence from the materials in their folder, and they could choose to compare the representation in these sources with Blackwell's own in *Pioneer Work*. This part of the assignment requires students in any course to work carefully with evidence and to apply the interpretive methods of the discipline.

As students considered audience and purpose in their analyses, they were required to be aware of their own audience and purpose. The end goal of publishing their writing on the Hobart and William Smith Web site (Students of English 213, 2009a, 2009b) allowed students to reach potential readers other than an instructor. Thus, they gained awareness of their identity as researchers and college members presenting the public with their informed perspectives on the history of their own institution. In addition to bringing to writers' attention their own obligations as experts, Web publication requires special consideration of format, specifically the visual and interactive relationship with an audience that is not usually a part of either print publication or traditional course papers. To meet these format needs, each pair chose an image from its folder to illustrate its topic. Finally, students formulated questions for further inquiry to post at the end of their paragraphs. Many writers improved their communication skills by providing set-up for their questions. Students in the natural and social sciences might expand their communication skills through the challenge of making terms and methods accessible to a lay audience. The interactive component gives all writers an opportunity to act as educators by prompting further thinking about the implications of their research. This reinforces the deep engagement and ownership of work that characterizes significant learning.

This project also built in students' investment in collegiate standards for documentation and diction. Citation practices transformed what may seem to many students an arbitrary requirement of college writing into their "real world" purposes: attribution and documentation for the use of other readers and researchers. Further, the annotated bibliography is a community-usable document that contributes to the Geneva Historical Society's information about its holdings. Another part of the collaborative composition process was editorial revision for punctuation, gram-

mar, spelling, and mechanics. To encourage independent learning, I proofread but only circled errors, and students shared knowledge and worked with reference sources to make corrections for themselves.

Collaborative Assessment and Publication

Using the wiki tool on Blackboard, each pair posted their paragraphs in chronological order, producing a cultural biography of Blackwell from her time to the present (Students of English 213, 2009a) that started with a letter by her medical school classmate and ended with a recent biography for young adults (Somerville, 2009). Each class member read through the entire class biography. Two tasks remained. First, I asked the class to come to a consensus on an accurate, comprehensive, and inviting title for the biography. This task took nearly a whole class period, which was time well spent because it required the class to articulate the overall significance of their collective findings and claims. At this stage, the class was able to discern changes in gender attitudes and assumptions during different phases of American history from the mid-19th century up to the present. Students began to recognize the implications of their own construction of Blackwell as they generated title ideas and talked through the process of selecting and refining the final title. Idea exchange and collective assessment increased class cohesiveness. In particular, large-group collaborative meaning-making skills improved as we considered the most important information to include in the title and decided on a rhetorical stance toward Blackwell that satisfied everyone.

The final biography was posted to the Colleges' Web site under the title "160 Years of Public Ambiguity: Inquiring into the Reception History of Dr. Elizabeth Blackwell, Social and Medical Pioneer" (Students of English 213, 2009a).

Individual Assessment

While students gained experience with whole-class collaboration, each also had an opportunity to articu-

late for herself the significance of the class's combined findings. In a single paragraph with a self-designed title (Students of English 213, 2009b), each student offered her perspective on shifting representations of Blackwell over time. Since our first discussion of *Pioneer Work*, they had significantly advanced their critical insight into Blackwell's iconic status in relation to gender politics (in the sense of power negotiation among and within groups). By this stage of the project, students showed a much more insightful and nuanced grasp of specific historical contexts and their bearing on textual interpretation, of the variability of cultural priorities over time, and of the fluidity of gender as a social construct. For example, several writers demonstrated significant critical awareness when they noted that recent feminist interpretations of Blackwell as a women's rights contributor conflict with the doctor's own ambivalence about the women's movement of her time.

Individual assessment complemented the collaborative work to give students an opportunity for independent thinking. Yet at the same time, they were able to gain insight into a 160-year span of history and its shifting gender politics because of the whole class's combined efforts. Because students acted as the original investigators of primary sources, they were thoroughly invested in Elizabeth Blackwell as a person with a local history. What is more, they substantively expanded their fluency in rhetorical analysis by connecting representations of Blackwell with the larger picture of American cultural history. They were even able to see their own positioning in women's professional history. In other disciplines, too, the project can open up students' vision of a larger picture and encourage reflection about their own place in it—as organisms, ethnographers, or consumers, for example. What is more, the tasks of title design, questions for readers, and individual assessment of the collaborative document promoted “self-managed learning” as well as an awareness of the personal significance of the knowledge they had created. Without

such critical reflection practices, even independent research assignments are not likely to yield these learning outcomes (Candy, 1991; Fink, 2003).

Learning Outcomes Beyond the Project

The project concluded at mid-semester, but until the end of the course, students used their deep fluency in Blackwell's history and the questions it raised to analyze other readings and their relationship to women's healing work. Through research, students entirely overturned their preconceptions about Elizabeth Blackwell and developed significant new thinking about the gender politics of self-representation, professional history, and cultural change. What is more, the “concrete” evidence of gender inequality that students discovered for themselves convinced them of its continued existence, which prompted further inquiry. An unexpected outcome of the project was to ready students for theoretical approaches to gender. In lower-division courses, students tend to struggle with the language and concepts of social constructivist theory. I found that with the ability to formulate theoretical questions that students had developed on their own through this project, and after soliciting for interest, I could add an impromptu introduction to Judith Butler's performativity theory (1993). Students grasped this theory more accurately and productively (as shown in their ability to apply it in final papers) than had students in other courses in which we studied Butler's text without an experiential learning activity.

During the second half of the course, students showed further signs of meeting the goals of significant learning. Application skills improved because they used new knowledge to make meaning of competing narratives about women as healers in subsequent course texts. Integration, the ability to connect different bodies of knowledge, improved as they articulated links among medical history, gender theory, and rhetorical aspects of fiction and biography (Fink, 2003). Many

students reported that their understanding of and ability to apply Butler's theory to other texts was one of the most useful learning outcomes of the course. Perhaps most importantly, their active learning about gender from historicized and constructivist perspectives generated a personal investment in understanding gender disparities in current culture. Female pre-health professions students in particular articulated the importance of this new insight as they negotiated the graduate school admissions process and created career plans. The Blackwell project ultimately led to students' recognition of the personal and social implications of their new knowledge, which meets another key goal of significant learning (Fink, 2003).

Archival Research Projects in Other Disciplines: Some Suggestions

While this report describes a case study project in an interdisciplinary English and Pre-Health Professions course, instructors in any discipline can design archival research assignments to meet course goals. Instructors can also adapt the assignment to take advantage of diverse institutional and local resources. Off-campus archives offer students a chance to explore the larger community in which they live; however, collegiate library archives are equally rich and often underutilized sources for hands-on student research. The focus of an archival project need not be a single historical figure (or even a famous figure); other projects could focus on topics in local, institutional, or disciplinary history such as those of architecture, fine and performing arts, environmental studies, urban planning, engineering, women's and gender studies, philosophy, political science, religious studies, and American studies, to name just a few. The essays in *Local Histories*, for instance, draw on rich archival yields to uncover great diversity in the development of composition as a discipline at different types of institutions including normal schools, African-American colleges,

and junior or community colleges (Donahue & Moon, 2007). Archival research also offers instructors of any writing-intensive course the opportunity to create assignments that emphasize particular steps of the composition process.

As I have suggested, archival research need not be limited to the humanities. In the social sciences, collections of materials about, for example, on- or off-campus organizations, events, or socio-cultural phenomena might provide especially fertile opportunities for qualitative research. In the natural sciences, the archives could be used to find original data (for example, of local astronomical phenomena) or to assess other scientists' observations (for instance, about local flora or fauna). Archives may also house collections that document the development of a theory, method, discovery, or invention. College and university archives in particular often collect institutional artifacts and documentation. Collections document key people and events, changes to a local place over time, and demographic data. Personal, civic, and legal records in particular offer a wealth of raw data for students to interpret using disciplinary methods. The artifacts examined need not be limited to text, but could also include film, photography, artwork, music, and even objects. Archives thus offer the opportunity for instructors and students to work with materials that are atypical to their discipline. Photographs, for example, might be used to enhance students' qualitative description skills in an environmental science or anthropology course. The Geneva Historical Society has a fine collection of antique medical equipment, which made a deep impression on learners before they began looking into their folders.

There is much room, too, for a variety of final products. Students can research and write collaboratively with or without a whole-class document as a final product. Small groups of three or four can work on free-standing pieces to be assembled as a class product in various ways. Other possible delivery formats, for

example, might be 'zines, public presentations, poster sessions, campus-wide and municipal print publications, or multimedia formats such as films and websites. Each format has distinct formal requirements to engage students' learning of disciplinary and/or public communication conventions.

The results of this project suggest that students who investigate and evaluate primary materials for themselves engage deeply and reflectively with course content. But such projects can do much more than that in lower-level courses across the collegiate curriculum. Archival work also introduces intersectional investigation by connecting historiographic or biographical evaluation with the topics or methodologies of any discipline. This cultivates learners' ability to connect bodies of knowledge and to synthesize methods of meaning-making among disciplines. Experience as "detectives" and ultimately as experts stimulates learners' caring about intellectual inquiry in lower-level courses, thus helping them to become more self-managing and reflective participants in their disciplines, in their communities, and eventually in their professional lives. ■■

References

- Blackwell, E. (2005). *Pioneer work in opening the medical profession to women*. New York: Humanity Books.
- Bonwell, C., & Eison, J. (1991). *Active learning: Creating excitement in the classroom*. Washington, D.C.: ERIC Clearinghouse on Higher Education and the Association for the Study of Higher Education.
- Butler, J. (1993). *Bodies that matter: On the discursive limits of "sex."* New York: Routledge.
- Candy, P. (1991). *Self-direction for lifelong learning: A comprehensive guide to theory and practice*. San Francisco: Jossey-Bass.
- Donahue, P., & Moon, G. F., eds. (2007). *Local histories: Reading the archives of composition*. Pittsburgh: University of Pittsburgh Press.
- Fink, L. D. (2003). *Creating significant learning experiences: An integrated approach to designing college courses*. San Francisco, CA: Jossey-Bass.
- Jones, S. R. (2009). Constructing identities at the intersections: An autoethnographic exploration of multiple dimensions of identity. *Journal of College Student Development* 50 (3): 287-304.
- Millis, B. J., & Cottell, P. G. (1998). *Cooperative learning for higher education faculty*. Phoenix, AZ: ACE/Oryx Press.
- Somerville, B. A. (2009). *Elizabeth Blackwell: America's first female doctor*. Pleasantville, NY: Gareth Stevens Publishing.
- Students of English 213. (2009a). 160 years of public ambiguity: Inquiring into the reception history of Dr. Elizabeth Blackwell, social and medical pioneer. Hobart and William Smith Colleges. Retrieved from http://www.hws.edu/about/blackwell_history.aspx.
- Students of English 213. (2009b). Students' reactions. Hobart and William Smith Colleges. Retrieved from http://www.hws.edu/about/blackwell_reactions.aspx.
- Weimer, M. (2002). *Learner-centered teaching: Five key changes to practice*. San Francisco, CA: Jossey-Bass.

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Using Online Formative Assessments for Improved Learning

Barbara F. Cherem

Abstract

This article explores the use of formative—process driven—online assessments and argues that, done correctly, these assessments can improve student learning outcomes for any teacher who uses an online course management system (CMS). Although the methods of, and implications for, the use of formative assessments as described here are applicable to all teachers, this article describes their use with teacher education candidates in a special education graduate program. Using assessments *for* learning, rather than assessments strictly *of* learning, is particularly helpful when one considers today's rapid-paced and frequently reduced face-to-face classroom time. Such assessments also help reduce performance-inhibiting anxieties of certain overly anxious adult professionals who return to the classroom with a professional identity at some risk. Such lower-stakes formative assessments establish a more comfortable learning environment and increase students' potential for success on the summative final exam. Not only can the application of assessments in this manner be extremely beneficial in any subject, but it is also valuable for gauging and accelerating the learning of any level or type of student.

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Keywords

formative assessments, online learning, pre-assessments, adult learners, mixed-mode learning, motivation.

Introduction

A decade ago, one of the prominent mantras in assessment circles was the use of assessment *for* learning (formative), rather than merely as evaluators *of* learning (summative) (Stiggins & Chappius, 2005). Historically, summative evaluation has been the predominant focus of student assessment. As explained by Chappuis and Chappuis (2007/2008), this type of testing merely “documents how much learning has occurred at a point in time; its purpose is to measure the level of student, school, or program success” (p.15). Alternatively, formative assessment is process driven. As described by Smith (2007), “formative assessments continually assess students’ learning progress [...], providing] feedback to students and instructors that determines the

course of subsequent teaching and learning activities” (p. 31). Practicing this type of assessment implementation transforms testing into something more than simply a means of determining grades for students’ performance. Formative assessments are functional—they increase proficiency and focus in planning, reduce student anxiety, give students an added sense of ownership in their development, and, ultimately, promote the comprehension of the course content (Smith, 1997; Stiggins, 1997; Stiggins & Chappuis, 2005; Stiggins & DuFour, 2009; Wlodkowski, 2008).

From 1997-2004, I directed assessment activities for a P-12 public school district that served approximately 12,000 students. During this time, one of the core values of the district was the importance of formative assessments as tools for teaching rather than mere evaluations. Being opposed to tests merely for end-of-unit grading purposes, Stiggins (1997) can, to a large extent, be credited for beginning the movement toward transforming assessment into a teaching tool and for becoming one of its most prominent advocates. Prior to Stiggins’s (1997) early publications, the research literature on this subject was sparse. Because of this, few schools attended to the use of assessments for formative purposes.

Background on Value of Formative Assessments

In the late 1990’s, many researchers and practitioners of educational theory began exploring, and eventually supporting, the notion of assessments as tools for learning. Classroom assessments for learning initially started attracting attention because it became clear that, unlike assessment with a summative purpose, formative assessment (a) had a purpose more intimately tied to teachers’ instructional goals; and (b) presented a potential for improving student learning which was more immediately evident, as well as instructionally relevant (Knowles, 1984). Such assessments provide a greater level of teacher autonomy and are more contextually

linked to their classroom’s curriculum. In addition, they are an effective means of teaching a wide variety of students in varied learning environments such as both online and face-to-face classes.

When I returned to teaching in higher education three years ago, I was charged with utilizing mixed-mode courses—those which are taught in class as well as online, in alternate weeks—to prepare teachers at the graduate level. One of the first advantages of this mixed-mode or “blended” learning that I recognized was the ease with which one could determine “the end.” For instance, through online pre-assessments, one can identify what areas are fairly well mastered by a particular group of students as well as those which are in need of greater attention. Such pre-assessments provide effective, immediately applicable feedback and point out the strengths and weaknesses of the student group. According to Chappuis and Chappuis, “feedback in an assessment for learning context occurs while there is still time to take action” (p.15). The pre-assessment and the monthly formative quiz of content knowledge are two types of formative assessments which are particularly suited for online use.

Pre-Assessments: Why Online Works so Well

One of the most significant benefits presented by the use of pre-assessments is time efficiency. In contrast to traditional methods of assessing students’ knowledge and skills, which are usually time-consuming and difficult to implement, online pre-assessments allow instructors easy access to that information. Because students complete such assignments before the first face-to-face (F2F) class even occurs, an instructor is able to gain insight into their knowledge base prior to the actual beginning of instruction. This results in several important outcomes, the most useful being the ability to identify which students are experienced and which are novices.

Although identifying students' varied levels of understanding is an extremely important factor at any level of instruction, it is particularly vital when teaching in higher education (Renfro & Grieshaber, 2009). College teachers often face a student population with wide-ranging ages and skill levels. These elements of student readiness become especially pertinent to one's instructional plans when students are part of an education program. For example, students are as likely to be mid-career, experienced classroom teachers as they are to be pre-service neophytes with little field experience.

When considering the substantial benefits of collaborative learning, as well as its developmental potential, it becomes particularly important that an instructor is able to efficiently identify and create groupings of a diverse nature, such as pairing experienced students with novices (Huebner, 2010). Pre-assessments allow teachers to do so quickly and easily. Introductory discussion board posts (e.g. "Getting to Know You")—common to many online courses—may get to some aspects of this experience; however, the higher quality of objective evidence gained through online pre-assessments (i.e., an accurate read of students' content knowledge) offers more substance and reliable information for an instructor. The various settings in which some teachers have taught are equally diverse in their varied demands and types of experiences—for instance, charter schools and/or P-12 public schools versus alternative community education settings. The pre-assessment adequately screens for these significant differences in a way that the self-disclosing, introduction-type discussion thread cannot.

An additional function of the pre-assessment is that it allows one to identify common deficit areas in the class of incoming students. Through online assessments, the opportunity for quick item analysis is enhanced. Because of the vast differences in students' common knowledge bases, discovering what students know and what essential information and concepts they lack is

key to planning a successful instructional program. This point is clearly illustrated within the daily proceedings of any higher-education classroom; some students enter courses fairly knowledgeable about the material already, while others have practically no familiarity with basic concepts. It is common in the University of Michigan's special education courses for a percentage of teachers to arrive in class with an extensive knowledge of parental rights because they are parents of children with special needs. Conversely, others may have had experiences as special education classroom paraprofessionals and may have a deep knowledge of other aspects of school policies and practices related to special education. Clearly, such a mix of prior knowledge and experiences poses an important challenge and opportunity in the learning environment (Park & Choi, 2009). Online pre-assessment allows instructors to tailor their courses to the needs and level of each new class, thereby implementing a student-centered mode of instruction based in part on that "quick identification" of focus areas. Especially when considering the reduced F2F class time characteristic of online courses, it is imperative that all class time be used wisely (Rovai, 2000).

Lastly, instructors are able to use pre-to-post assessments to document students' success in meeting required objectives, an ability useful for any site with accreditation needs. These online pre-to-post assessments also allow the tracking of individual growth—a topic of interest to the instructor as well as the students. Pragmatically, they also allow for the easy charting of students' collective growth. More importantly, the exit scores actually reflect students' competence. Under the reauthorized Elementary and Secondary Education Act (ESEA-2001), the federal law also known as "No Child Left Behind," all teachers must pass state qualifying tests. Thus, Education Departments have an obligation to prospective teachers to prepare them for these exams. With the information about their strengths and weaknesses provided by these

assessments, students can identify the areas they need to concentrate on when they prepare for state teacher exams and certification assessments.

Formative Assessments as a Means to Reduce Anxiety

One especially prevalent characteristic of teaching graduate-level adult students is that these learners are typically extremely motivated (Knowles, 1984). Ironically, this has become a dual-edged trait; when adult students' motivation becomes overly high, it poses an obstacle to their learning development. As brain research indicates, the presence of anxiety "downshifts" the brain's processing so that it functions more slowly. Additionally, it interferes with the brain's ability "to learn, solve problems, and grasp new ideas" (Lantieri 2008, p. 3) In an attempt to discover how to eliminate the negative effects of this driving force without detracting from the good stress that fuels their motivation, I formulated a hypothesis, based on an analysis of adult-learner anxiety levels, about why the anxiety levels were so high and what could be done to reduce student anxiety without lowering their motivation and learning goals. By making a transition in assessment pedagogy from a summative orientation to a lower-stakes formative one, an instructor is able to address both of these purposes.

In reflecting on adult learners' potential for undercutting their own performance as a result of accelerated levels of anxiety, it became apparent to me as early as 1989 that adult students' sense of self-efficacy in their home lives as workers, spouses, or parents was correlated with the degree to which they placed their egos at risk by returning to school. Knowles (1984) was one of the first researchers to begin to document the importance of this factor, increased self-at-risk variable, as commonly affecting student achievement. For example, graduate students admitted to the Special Education Program at the University of Michigan-Flint were often competent teachers accustomed to leading a class.

The pressure of having to maintain their self-image placed them at even greater risk when re-entering the classroom as learners. Wlodkowski (2008) explained that "adults want to be successful learners. This goal is a constant influence on... [their ability to learn] because success directly or indirectly indicates their competence" (p.100).

During the 1980's, there was an emergence of research on the distinctive characteristics of adult learners as unique from younger students; the body of literature on the theory of adult learning—"andragogy," as coined by Knowles (1984)—brought these distinctions to the fore. More recently, many others have begun stressing this critical feature of adult learners (Ruey, 2010; Zemke & Zemke, 1984). In his discussion of adult learners and at-risk egos, Wlodkowski (2008) explains, "If adults have a problem experiencing success or even in expecting success, their motivation for learning will usually decline" (p.100). And according to Mordkowitz and Ginsburg (1987), "adults pay keen attention to indicators of success while they are learning" (qtd. in Wlodkowski, 2008, p.100). Unlike younger undergraduate students, who, often, have yet to assume the roles characteristic of adults, these students (adult learners) have something quite real to protect, or lose, in the classroom setting: their well established sense of self as competent adults.

When the adult learners reentering the classroom setting are teachers—individuals who are accustomed to being in charge of a class of students rather than being students, themselves—this sense of vulnerability can increase considerably. Consequently, the anxieties driven by a fear of failure, as well as the implications of such failure, can become a significant detriment to learning and development. I have found this supposition to be particularly accurate and clearly exemplified within UM-Flint's teacher preparation program.

Yet this fear of failure can produce, at least to a minor extent, positive outcomes as well: it fuels moti-

vation. I believe that concern for the preservation of self-image drives the desire to not only complete, but to excel in school. This concept of failure-driven anxiety places formative evaluations in a particularly attractive position; it reduces the pressure and allows for students' thought processes to become fully engaged without interruption by their fears of inadequacy (Ioannou & Artino, 2010). Online formative evaluations are, in a sense, more privatized attempts to learn; and, when given an opportunity to make multiple attempts and have the scores of each averaged, they provide a much greater opportunity to achieve a high level of success (Rovai, 2000). Generally, although it is not guaranteed, once students have taken the quiz the first time, it is completely within their ability to obtain a perfect score on the second attempt.

In my mixed-mode courses, formative assessment practices are an integral element of the instruction. For example, students are given two attempts on their monthly open-book review quizzes. Implementing this system of formative testing throughout the semester gives students the opportunity to (a) study before each of the first attempts on the review quizzes; (b) complete the test, view the results, and use the information to redirect further study before the second attempt; (c) retake each quiz; and (d) use the results of the second attempts to advantage in preparation for the cumulative final. In addition, because all items on the summative final exam are drawn from the monthly formative quizzes, the opportunity for students to achieve mastery of the content is substantially increased. This strategy—using the content from the quizzes as “feeder items” for the final exam—has proven to be extremely beneficial.

There are several variables which affect students' success rate when using formative assessment. Unlike summative testing, which merely indicates the content areas in which a student lacks understanding, formative tests give students an opportunity to (a) realize which areas of the content they need to further explore; and

(b) go back and learn that content. It is because of this fact that students seem willing to reinvestigate the areas of the content which they had not fully understood before the first attempt. This then serves as a significant variable influencing students' ultimate success. As asserted by Smith (2007), “Formative assessment does not benefit all students if they do not fulfill their responsibility to learn” (p. 32). For instance, when students are given a specific number of attempts, and one averages the scores rather than using a substitution model, this system becomes one which encourages studying before each attempt.

Implementing this method not only encourages multiple study sessions, but also serves to combat the element of anxiety which can interfere with the student's accurate demonstration of his or her comprehension. These efforts ensure that the summative final is an evaluation which gauges the students' understanding of the intended objectives of the course. Such an approach also makes certain that the final assessment is representative of the course's effectiveness; it serves as a literal summation of the content *learned*, as opposed to one which is more reflective of what content was *perceived* to be covered by the instructor.

In my courses, the final exam is worth twenty percent of the overall grade, and it is administered during class on laptops. The most beneficial aspect of this type of online final assessment is that students are given immediate feedback on their results. Once students submit their final answers, the assessment is scored, with the results open to the student for review. The positive impact of immediate feedback has received a great deal of attention; it has nearly unanimous support as best practice throughout the educational community (Chappuis & Chappuis, 2007/2008; Phelps, 2010; Renfro & Grieshaber, 2009; Smith, 1997; Stiggins, 1997; Stiggins & Chappuis, 2005; Stiggins & DuFour, 2009; Wlodkowski, 2008).

Although students remain quite serious about their initial preparation for the quiz, they express a high level of appreciation for the opportunity to take these process-driven quizzes a second time. After they receive the results of a test, students have a week to request a second chance. Knowing that they can repeat quizzes also helps to alleviate the pressure of having their egos or grades “at risk” and so to diminish feelings of incompetence. With anxieties relieved, they can focus more directly on the content of the course, and the evaluations are more likely to reflect the strengths and weaknesses of the course structure and materials, rather than their anxieties. Providing such effective assessment practices eliminates the element of uncertainty and, consequently, lowers the likelihood that failure-driven anxiety will negatively impact students’ learning experience.

Some faculty members may perceive the practice of offering second attempts as compromising the integrity of the evaluation’s results, seeing it, at minimum, as being inappropriate and, at worst, as condoning cheating. Yet in actuality, being given the opportunity to learn from one’s mistakes promotes that which is at the core of the educational system: the opportunity of learning from one’s mistakes and thereby developing genuine competence (Chappuis & Chappuis, 2007/2008; Phelps, 2010; Renfro & Grieshaber, 2009; Smith, 1997; Stiggins, 1997; Stiggins, & Chappuis, 2005; Stiggins & DuFour, 2009; Wlodkowski, 2008). This strategy also helps to deliver the message to students that the institution and instructor are “on their side.” It makes the statement that their instructor’s emphasis is on development, rather than on test-taking ability. In teacher preparation programs, it also serves the added benefit of being a model of effective assessment practices for teacher candidates to draw from and implement in their own classroom. These benefits are the basis for the promotion of formative assessment integration. While the use of only summative assess-

ments can often pose a barrier to development and to students’ success in general, a pedagogy which favors formative evaluation fosters genuine learning (Stiggins & DuFour, 2009).

Summary

Although the concept of implementing assessments *for* learning as opposed to assessments *of* learning is not a new concept, it is certainly one that has the potential to produce a multitude of desirable results. In my experience with adult learners, the use of online formative assessments has been extremely beneficial to students’ success. Motivation, as well as the ability to process information and create meaning, is strongly affected by anxiety. It is also evident that those most affected by these types of pressures are students who are particularly motivated learners, as well as those who have fully developed professional identities. I have found that, with graduate teacher education students, the use of formative assessment practices is an invaluable and highly beneficial method of enhancing student understanding and promoting success. ■■■

References

- Chappuis, S., & Chappuis, J. (December 2007/January 2008). The best value in formative assessment. *Educational Leadership*. 65 (4), 14-18.
- Covey, S. (1989). *The seven habits of highly effective people*. New York: Simon and Schuster.
- Huebner, T. A. (February 2010). Differentiated instruction. *Educational Leadership*. 67 (5), 79-81.
- Ioannou, A., & Artino, A. R. (March 2010). Learn more, stress less: Exploring the benefits of collaborative assessment. *College Student Journal*. 44 (1), 189-99.
- Knowles, M. (1984). *The adult learner: A neglected species*. Houston, TX: Gulf Publishing Co.

- Lantieri, L. (2008). *Building emotional intelligence*. Boulder, CO: Sounds True Inc.
- Marzano, R. J. (2003). *What works in schools: Translating research into action*. Alexandria, VA.: Association for Supervision and Curriculum.
- Park, J. H., & Choi, H. J. (2009). Factors influencing adult learners' decision to drop out or persist in online learning. *Journal of Educational technology & Society*. 12 (4), 207-217.
- Phelps, M. (Spring 2010). Real-time teaching and learning. *Kappa Delta Pi Record*. 46 (3), 132-4.
- Renfro, L., & Grieshaber, A. (Fall 2009). Focus, feedback, follow-through. *Journal of Staff Development*. 30 (4), 26-8, 30-1.
- Rovai, A. P. (2000) Online and traditional assessments: What is the difference? *Internet and Higher Education* 3 (3), 141-151.
- Ruey, S. (September 2010). A case study of constructivist instructional strategies for adult online learning. *British Journal of Educational Technology*. 41 (5), 706-20.
- Smith, G. (July/August 2007). How does student performance on formative assessments relate to learning assessed by exams? *Journal of College Science Teaching*. 36 (7), 28-34.
- Stiggins, R. (1997). *Student-centered classroom assessment*. Upper Saddle River, NJ: Merrill Publishing.
- Stiggins, R., & Chappuis, S. (2005). Putting testing in perspective: It's for learning. *Principal Leadership (High School Ed.)*. 6 (2), 16-20.
- Stiggins, R., & DuFour, R. (2009). Maximizing the power of formative assessments. *Phi Delta Kappan* 90 (9), 640-44.
- Wiggins, G., & McTighe, J. (1998). *Understanding by design*. Alexandria, VA: Association for Supervision and Curriculum.
- Wlodkowski, R. J. (2008). *Enhancing adult motivation to learn: A comprehensive guide for teaching all adults*. San Francisco, CA: Jossey-Bass, p. 100.
- Zemke, R., & Zemke, S. (1984, March 9). 30 things we know for sure about adult learning. *Innovation Abstracts*, VI (8).

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Creating Connection: Composition Theory and Creative Writing Craft in the First-Year Writing Classroom

Carey E. Smitherman and Amanda K. Girard

Abstract

In the first-year writing classroom, students are rarely introduced to the composition theories that inform course pedagogy and writing situations. Although the Writing About Writing movement seeks to bridge this gap for students, the first-year writing course stands to lose its foundation in Writing Across the Curriculum models. Institution administrators and faculty across the disciplines are not always convinced that these courses provide students with the savvy to move overarching ideas about writing from one course to another. This paper introduces the notion of using the model of creative writing craft as an alternative for discussions about composition theory with first-year writing students. Since creative writers discuss craft in a way that is easily accessible to students, this model will help students achieve a deeper understanding of theory while preparing them to write in the disciplines.

Keywords

composition theory, craft criticism, Writing About Writing, first-year writing, creative writing craft, Writing Across the Curriculum

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Introduction

The Writing Across the Curriculum (WAC) movement, which began as early as the 1960s, continues to gain ground and thrive in academic institutions all over the world. Both faculty and administrators have continued to adopt the WAC premise that incorporating writing into courses across the disciplines will not only help students to understand course material more fully but will also help students to differentiate between multiple genres of writing whose conventions are often unique to a particular discipline. While WAC programs can vary greatly between institutions, first-year writing has come to be seen as the foundation for these programs. Whereas composition as a discipline (which stemmed from rhetoric) has been a field of study in some capacity for thousands of years, the WAC movement has again redefined the purpose of composition courses within the institution by teaching students to negotiate the rhetorical situation of any college level course (Townsend, 2002). As such, faculty from across the disciplines are becoming more aware of and concerned

about how writing is taught in the first-year classroom, making conversations about teaching writing and composition theory a central part of general education.

As teachers of writing, the two of us continually discuss composition theory through our conferences, texts, and program development. Students are exposed to these theories indirectly through the assignments given to them, the discussions about rhetorical purpose, or the classroom emphasis on process. They are then expected to transfer this knowledge to other writing opportunities throughout their academic careers and beyond. We argue that first-year writing students should be exposed to composition theory through classroom discussion. This discussion should allow students to understand writing better and engage in the conversation about composition theory as they continue their own experiences as novice writers. Because creative writers discuss and write about craft in ways that are very accessible to students, we see instruction about composition theory mirroring creative writing craft conversations in the first-year writing classroom. Giving students access to ideas about craft criticism, which we see as a metacommentary about writing, will enable them to better understand composition theory, engage in conversations about writing that few undergraduate students have had access to before, and become more informed in their application of these theories across the disciplines.

The Writing About Writing Approach

We should recognize here the Writing About Writing (WAW) movement, which supports the notion that students will be able to better transfer their experiences/knowledge in the writing classroom to other writing circumstances when introduced to writing scholarship in order to better learn the discourse of the field. In the introduction to *Writing About Writing: A College Reader*, Wardle and Downs (2011) assert that "...the best way to do this...[is] to...introduce[e] stu-

dents directly to what writing researchers have learned about writing and challeng[e] them to respond by writing and doing research of their own" (p. v). While we see value in this approach, it is not our purpose to say that writing theory, scholarship, and reflection on students' literacy need to serve as a main conversation or basis for a first-year writing course. Rather, discussions about these theories in the midst of other course content and writing opportunities will further aid students in applying writing theory. We agree with the WAW approach in that an understanding of composition theory gives students a context for their work; however, we also maintain the original purpose of first-year writing as a vehicle for both writing theory and WAC. Our approach recognizes that first-year writing courses became foundational in higher education in the first place because students need instruction about how to become academic writers beyond simply learning rhetorical strategies.

Breaking Down Discourse Boundaries

As students enter colleges and universities, they are asked to make connections and cross boundaries that aren't always clear. While students' academic growth, to some extent, is enriched by their ability to make these connections, faculty should help students navigate through foundational theories so that students may build upon them. As the WAW approach asserts, we contend that keeping composition theory discussions from first-year students is yet another boundary that needs to be broken in writing classrooms.

Scholars have created this boundary because most view the introduction of composition theory into the first-year writing classroom as an absurd notion. Not only is theory written on a level that college freshmen may not easily understand, but reading writing about writing may only confuse young writers. Many theorists recognize that the lack of a common language in the classroom makes it difficult for a college-level instructor

to decenter authority. But instructor authority needs to be decentered to a certain extent in order to demystify pedagogy and critical analysis of writing theory and practice for students. Allowing students to “see behind the curtain” of pedagogical practices in the classroom enables them to stake their own claims in moving from novice to more independent academic writers. In the oft-quoted 1985 essay “Inventing the University,” composition theorist and academic David Bartholomae (1985) alleges that “education has failed to involve students in scholarly projects, projects that allow students to act as though they were colleagues in an academic enterprise” because of the student’s lack of entry into the academic discourse community (p. 143). According to Bartholomae, most students are unable to engage in academic endeavors because too many students simply cannot understand the discourse enough to participate in an existing academic community. Bartholomae’s theory of inclusion through discourse is extremely useful in that it gives insight into the difficult problem of writing students’ exclusion from the academic discourse of composition theory. Faculty may focus on time-tested practices based on theory, but they do not expose the theories that govern these classroom applications to their pupils. Even Bartholomae (1985) recognizes that a disconnect exists between his theory and actual classroom practice; however, practical solutions for “basic writers” (or unsophisticated writers) are only referenced in his essay. He does not give practical implementation advice based on these references.

Bartholomae describes the problem of discourse as it applies to “basic writers,” but this discourse discordance is also a problem with regard to the social structure of classrooms. Throughout his essay, Bartholomae recognizes that teachers of writing rarely provide academic assignments that allow students to engage in the writing process as equals to their instructors. Of course, he realizes that even when instructors do offer students these “scholarly projects,” few stu-

dents, if any, are elevated to the level of colleague. He asserts that

The student, in effect, has to assume privilege without having any. And since students assume privilege by locating themselves within the discourse of a particular community—within a set of specifically acceptable gestures and common-places—learning, at least as it is defined in the liberal arts curriculum, becomes more a matter of imitation or parody than a matter of invention and discovery. (Bartholomae, 2003, p.143)

As a result, Bartholomae’s conclusion to this troubling problem of power in the classroom is that, as instructors, we must treat “our students as students,” until the students learn the appropriate discourse (p. 162). Unfortunately, his outlook reinforces the hierarchical structure in the composition classroom that he identifies as producing “mimicry” and not original academic discourse. Overall, Bartholomae sees himself as unable to give up his authority as a teacher and a scholar because he is already a part of the academy’s discourse community. Peter Elbow (1983) offers the most notable scholarly opposition, terming his own philosophy, conversely, “student empowerment,” though Mina Shaughnessy (2003), Paulo Freire (1970), and Gerald Graff (1992) all react against a classroom where the teacher holds all of the authority.

Accessing Composition Theory for Students

Two more recent books, *Being a Writer: A Community of Writers Revisited* (2003) and *What is “College-Level” Writing?* (2006), aspire to bring composition theory to undergraduates, but with only limited success. In their text, *Being a Writer: A Community of Writers Revisited*, Peter Elbow and Pat Belanoff (2003) have recognized the need for students to gain exposure to composition theory that “[doesn’t] hide [their] interest in theory,” but instead “reflects much recent scholarship in composition . . . push[ing] students to become

thoughtful about their writing process through regular entries in a writing process diary” (p. xxii). This book even includes small sections entitled “Ruminations and Theory” (Elbow & Belanoff, p. 141). However, these theory sections do not introduce students to explicit theory or even a remediated form of theory. Rather, they introduce students to practices inspired by theory that encourage students to reflect on their own writing practice.

An example of this theory-informed practice can be found in a “Ruminations and Theory” section on “The Dangerous Method” of writing. In this section, Elbow and Belanoff (2003) warn students that creating an outline of a whole paper before writing the paper is “dangerous” (p. 106). Elbow and Belanoff term the practice of deciding what a paper will be about before beginning to write the paper “the Dangerous Method,” because “it leads to various writing difficulties that most of us are familiar with,” such as “procrastinating” and “agonizing over every sentence” (pp. 106-107). The authors point out this notion in order to reinforce their own ideas about exploratory writing (Elbow & Belanoff, 2003, p. 107).

While it is evident that students need to learn new writing processes and practices so that they may see themselves as writers, we are concerned that a section that discusses exploratory writing practices using author-created terms, like “The Dangerous Method,” is titled “Ruminations and Theory.” Our fear is that composition students believe that they have been exposed to composition theory by using this text, but when asked to describe some of the theories the students use the terminology coined by Elbow and Belanoff (2003). *Being a Writer: A Community of Writers Revisited* continues to keep students out of the academic discourse community of composition theory by exposing students to practice instead of theory and using personally created terminology.

While a text/discussion introducing students to composition theory may need to remediate some of the language, the reality is that complex ideas require complex language, so students should be exposed to the original terminology as well as the language that helps them understand the concepts. Additionally, Elbow and Belanoff’s (2003) text confuses actual written theories with the pedagogical practice promoted by theory, furthering student confusion and keeping students out of the composition theory discourse community. Although *Being a Writer* aids in a student’s engagement with composition theory by recognizing that the first-year classroom should include theorists’ ideas, the book fails to actually include any theory and instead promotes student reflection. This is a lost opportunity: students need to be included in the scholarly discourse about composition theory in order to gain a better understanding of the context for first-year writing classrooms and to gain motivation as individual writers.

We can begin to see the benefit of this type of theoretical instruction in Patrick Sullivan and Howard Tinberg’s (2006) collection of essays entitled *What is ‘College-Level’ Writing?* Their collection includes some student essays that reflect on a student writer’s experience with writing before and during his or her college career. The book itself is published by NCTE and includes essays from theorists, professors, administrators, high school teachers, and first-year college writing students all attempting to answer Sullivan’s question, “What is ‘College-Level’ Writing?” (p. 1). Sullivan answers this question himself in his essay “An Essential Question: What is ‘College-Level’ Writing?” by stating that

[A] student should write in response to an article, essay or reading selection that contains at least some abstract content [, which] should demonstrate [...a] willingness to evaluate ideas and issues carefully[, s]ome skill at analysis and higher-level thinking[, t]he ability to shape and

organize material effectively[, t]he ability to integrate some of the material from the reading skillfully[, and t]he ability to follow the standard rules of grammar, punctuation, and spelling. (Sullivan, pp. 16-17)

Sullivan's answer concentrates on the skills that a student must master in order for his or her writing to be considered college level. Many of the responses in the book, however, such as Kathleen McCormick's (2006) "Do You Believe in Magic?," focus on the theory that connects to the teaching practices described.

McCormick (2006), a Professor of Literature and Pedagogy at Purchase College at State University of New York, relies on "concept[s] of epistemic rhetoric put forth by James Berlin and ... analyzed in depth by George Hillocks, and the notion of flow, first developed by psychologist Mihaly Csikszentmihalyi and put into ...practice by Michael Smith and Jeffrey Wilhelm," to discuss how collaborative research helps students research and write individually (p. 200). McCormick focuses on the theoretical basis for her assignment before discussing the assignment, classroom practices, and student skill set later in her essay.

Similarly, Kimberly L. Nelson (2006), a first-year student at the University of Iowa, in her essay "The Great Conversations (of the Dining Hall)," includes the little bit of composition theory that she knows as a student writer to help support her conversational concept of learning. Nelson "come[s] to understand" that she was "making [her] first utterances in the 'conversation of mankind'" and relates the experience of discussing her paper with her mother to Kenneth A. Bruffee's quote, "Reflective thinking is something we learn to do, and we learn to do it from and with other people. We learn to think reflectively as a result of learning to talk" (p. 286).

Obviously, McCormick's exposure to theory is much different than Nelson's because McCormick is an established scholar and Nelson is a first-year student.

Nelson uses what little knowledge she has of theory to reflect on her writing process because classroom practice and textbooks like *Being a Writer* (2003) teach students that theory is related to reflection. If a student writer like Nelson was exposed to more composition theory, then she could begin to think more deeply about how theory is connected to her own ideas and processes. Direct exposure to composition theory, as opposed to classroom or pedagogical practices, can help give students context for their own writing in the writing classroom and throughout their college career.

In making these assumptions, we still understand that in students' minds, composition is a required general education course; they usually do not think of themselves as writers. And they are not often pointed to texts that lead them to believe they are. Elbow and Belanoff (2003) address students as writers throughout their text, titling the first chapter "Discovering Yourself as a Writer" (p. 3). However, the focus of the text is on the practices inspired by the theories that Elbow and Belanoff subscribe to, not necessarily the theories students may come to adopt for themselves. Sullivan and Tingberg's (2006) text invites students into the discussion surrounding the question, "What is College-Level Writing?" but only includes one student essay that attempts to address composition theory as support for her argument in any way. Although Sullivan and Tingberg's text seeks to include student writers, how would a first-year writing student know about this text or gain access to it?"

We both encountered *What is "College-Level Writing?"* during our graduate studies, and we have shared some of this text with our students, but we do not believe that these essays were intended for a first-year writing student classroom. Sullivan and Tingberg's (2006) text is not a student textbook and does not present theory directly for its readers. Composition theory is mentioned throughout different essays in the book, but only in a way that helps contextualize individual

authors' answers to the overarching question. Thus, both *Being a Writer: A Community of Writers Revisited* and *What is "College-Level" Writing?* show an eagerness for composition theorists and teachers to share their knowledge about composition theory, but neither clearly expresses theoretical concepts so that beginning scholars may join the conversation. As recognized by WAW pedagogy, introducing composition theory in the first-year writing classroom is a new way to give students context for their work as writers and to encourage them to consider themselves writers (or people who write). But we must be mindful of the responsibilities of the first-year writing course to the academy. While WAW situates composition theory and scholarship as the central focus in the classroom, we worry that this move may compromise the foundational goals of first-year writing. To negotiate the connection between first-year writing and composition theory, we see creative writing craft as a model to give students context.

Creative Writing Craft and Composition Theory

First-year students tend to think of most writers as creative writers. These institutionally constructed boundaries between creative writing and composition theory continue to be broken down in writing classrooms, but composition students are typically not exposed to authors' discussions about craft. Tim Mayers (2005), in his book *(Re)Writing Craft*, argues that "craft criticism . . . can and should serve as a bridge between creative writing and composition studies" in order to "forge an academic disciplinary area in which writing is of primary concern" (p. xiv). Mayers' argument hinges on the idea that creative writers and composition theorists need to share a department in most major universities because of their shared concerns. He recognizes that "because first-year composition courses are usually required of all students, whereas creative writing courses are not . . . students in creative writing courses . . . want to be in those courses," and, therefore, that "cre-

ative writing students . . . are far more likely to think of themselves as writers and to enjoy writing" (pp. 114-115). As illustrated by Elbow and Belanoff's (2003) text, composition instructors want their students to consider themselves writers and take their writing seriously. However, as Mayers points out, required course classroom environments differ from the atmosphere in a class the student elected to take. We agree with Mayers' classroom distinction, and we also make it a goal in our classrooms to promote the idea that students should see themselves as writers. We see the marriage of composition theory and creative writing craft in the first-year writing classroom as a way to help our students see themselves as writers.

In the first-year writing classroom it is important that students see themselves as writers in order to stay engaged and motivated while developing and discovering their own complex writing processes. However, similar to an issue found in Writing About Writing classrooms, many composition instructors may be concerned that engagement with creative writing craft or composition theory will either put students into a writing-centered vacuum or into a creative writing course that does not focus on other academic writing. Through Writing Across the Curriculum theory, however, we understand more fully the effects that a strong foundation in writing theory/practice has on students' performance across the disciplines. The WAC approach, which promotes both writing to learn and writing in the disciplines, gives students the opportunity to use writing as a tool to better learn course material and to learn a particular discipline's specific conventions and genres. Mayers (2005) also presents a dichotomy of concern for writing instructors, stating that he "understand(s) that writing is an act of discovery . . . but [does not] want to do [his] students a disservice by proceeding from a notion of writing their future professors will not share" (p. 135). Like Mayers, we recognize that writing is about exploration but also

that first-year writing courses are required by almost all major post-secondary institutions because students need to learn the skill set that will aid their future academic and career writing endeavors.

This recognition leads us back to the conundrum that is composition. For decades, those of us who research and teach composition have situated our thinking around the fact that writing is both a discipline and a skill. Unlike so many other disciplines, writing is at once transparently connected to almost every class on campus. Institutional pressures often inform what we teach in the first-year writing classroom, so we often leave out theory to make way for a skill set, arming students with a “bag of tricks,” or set of general writing practices, to get through writing across the disciplines. Considering creative writing craft may be the link so that more explicit theory can inform student writers.

We do not want the first-year writing classroom to turn into a creative writing course or a remedial course about composition theory. Mayers (2005) suggests that “even in a composition course that focuses exclusively on the academic, analytical, and interpretive essay” students should be asked questions like, “How did you plan for these pieces before you wrote them?” and “Did you discover anything new while you wrote?” in order for the student to “understand writing processes” and “to find poetic elements even in the most rigidly structured types of writing” (p. 135). Again, Mayers, like Elbow and Belanoff (2003), sees the interaction between creative writing craft and composition theory as being reflective, with the added goal of recognizing the creative element in any academic writing situation. Mayers also suggests assigning some creative writing in composition courses, but mentions that he “rarely teach(es) the university’s required first-year composition course” and admits some of the difficulties he has encountered engaging his third-year composition students in the creative writing process (p. 137-138). We are not necessarily promoting creative

writing in the first-year writing classroom; however, we hope to expose students to craft criticism in order to contextualize composition theory.

We agree with Mayer (2005) that “craft criticism” and composition theory are closely related, and we believe in his idea that there should be “a productive alliance between the two fields”; in addition, we would argue that this connection makes composition theory accessible to first year students (p. xiv). If college composition students understand how closely their writing practices are connected to those of the creative writers they look up to, then the students will be better able to take their own writing seriously and become more motivated. Mayers defines “craft criticism” as “critical prose written by self- or institutionally identified ‘creative writers’” in which “textual production takes precedence over any concern with textual interpretation” (p. 34). He identifies that “craft criticism” includes a pedagogical element and an evaluative element, much like the reflective writing that he and Elbow and Belanoff (2003) advise students to do. By having first-year writing students read “craft criticism,” we see an instructor giving students a model for reflective writing and a context to help them understand clearly stated composition theories. For example, an instructor might use portions of Stephen King’s (2000) *On Writing* to show students that professional creative writers engage in the same type of reflective writing as they do. By giving students examples of “craft criticism” and then having them write reflectively on their own writing, instructors are affirming the students as writers and showing students that they are part of the writing discourse community.

Exposure to “craft criticism” and reflective writing serves as a bridge to composition theory. After discussing a particular creative writer’s process by using a “craft criticism” example, we suggest that writing faculty introduce students to a composition theory that can be applied to the “craft criticism” example in simple

terms and show the students how those terms relate to the more complex discourse of the original theorists. Faculty can do this easily by showing the theory that supports particular classroom practices, such as peer response. In this example, by giving students an introduction to the social constructionist view of composition—or the view that writing is a social act—and the theorists who subscribe to this view, students will gain a better understanding about why they are asked to participate in peer response and why it is seen as a useful tool in the writing process. By incorporating theory, students learn the language and can engage with the composition theory discourse community.

The Skewed View of Composition Theory

By giving students the theory and an example of how that theory might be applied, it may be argued, the instructor is only giving the students a skewed view based on the scholar's own prescribed theories and biases. Mayers (2005) points out that "the 'theory wars' in English studies have been largely about how theory might (or might not) be 'understood' or interpreted or how it might be used as an instrument for interpretation" among scholars, and we suspect that this potential bias will be a greater concern with first-year students (p. 130). Gerald Graff (1992) addresses the idea that "students are expected to join an intellectual community that they see only in disconnected glimpses" when they are only exposed to one scholarly perspective about any topic (p. 12). In his book *Beyond the Culture Wars*, Graff presents the problem of students being thought about, but not included in their own education or the work of the academy through cultural conflict models. He introduces practical pedagogical techniques to help students understand one interpretation of a piece of writing by presenting an opposing or different view of that same piece of writing. We hope that scholars will build on Graff's pedagogical practices by bringing other scholars into the classroom to discuss their guid-

ing theoretical principles, once students have built up the necessary discourse in order to become part of this scholarly conversation.

We see Graff's (1992) pedagogical approach as the practical application of John Trimbur's (2003) "rhetoric of dissensus" to the first-year writing classroom (p. 470). Trimbur introduces a "rhetoric of dissensus" as a term offered to readers in his essay "Consensus and Difference in Collaborative Learning." The term is defined as a recognition of the existence of differences and that different positions/perspectives can only be understood in relation to each other. In our view, creating a "rhetoric of dissensus" will cause conflict within the classroom between scholars or academic perspectives that will reveal to students that there are other theoretical vantage points and that the teacher is not an unwavering authority. We see the inclusion of other scholarly opinions on theory in the first-year writing classroom as a way to decenter classroom authority and include students in a scholarly discourse community that helps them feel more like writers.

Students as Writers

It is important for students to feel like writers, at least to some extent. For students to be successful in academia and in the workforce, a dedication and attention to writing well must be achieved. When students are only asked to think of writing as a skill, they struggle to become engaged with their processes. Teachers of general education writing courses will be able to better motivate their students by bringing creative writing craft together with composition theory in the first-year writing classroom. Additionally, students will have a way to understand composition theory and further engage in the ongoing conversation of writing. Creating connections between creative writing and composition theory is an innovative way for instructors to make the composition classroom a place to talk about writing so that students recognize themselves as writers.

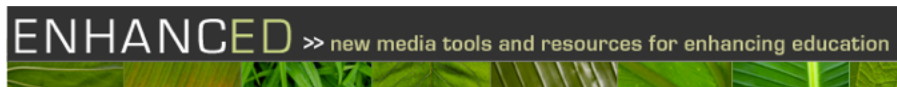
If composition instructors consider this approach and other strategies to include students in theoretical conversations about writing, they will be able to better prepare these students to write in other areas of academia. By engaging students in the discourse about writing, whether through creative writing craft or WAW approaches, students are better able to articulate their own need for further instruction and/or clarification in other courses. Faculty across the disciplines will benefit from the transferable knowledge students gain and can continue cultivating students as learners and writers in any discipline. Making writing a more accessible and palpable experience for students will only further the mission of WAC and give instructors from all disciplines a stronger foundation from which to work. ■■

References

- Bartholomae, D. (1985). *Inventing the university. When a writer can't write: Studies in writers block and other composing process problems*. M. Rose (Ed.), New York: Guilford Press.
- Elbow, P. (1986). *Embracing contraries: Explorations in learning and teaching*. New York: Oxford University Press.
- Elbow, P., & Belanoff, P. (2003). *Being a writer*. New York: McGraw Hill.
- Freire, P. (1970). *Pedagogy of the oppressed* (Myra Bergman Ramos, Trans.). New York: Seabury Press.
- Graff, G. (1992). *Beyond the culture wars: How teaching the conflicts can revitalize American education*. New York: W. W. Norton and Co.
- King, S. (2000). *On writing*. New York: Pocket Books.
- Mayers, T. (2005). *(Re)Writing craft: composition, creative writing, and the future of English studies*. Pittsburgh, PA: U of Pittsburgh Press.
- McCormick, K. (2006). Do you believe in magic? Collaboration and the demystification of research. In P. Sullivan & H. Tinberg (Eds.), *What is "College-Level" writing?* (pp. 199-230). Urbana, IL: NTCE.
- Nelson, K. (2006). The great conversation (of the dining hall): One student's experience of college-level writing. In P. Sullivan & H. Tinberg (Eds.), *What is "College-Level" writing?* (pp. 283-296). Urbana: NTCE.
- Shaughnessy, M. (2003). Diving in: An introduction to basic writing. In V. Villanueva (Ed.), *Cross-Talk in comp theory* (pp. 311-317). Urbana, IL: NTCE. (Original work published 1976.)
- Sullivan, P. (2006) An essential question: What is "College-Level" writing? In P. Sullivan & H. Tinberg (Eds.), *What is "College-Level" writing?* (pp. 1-28). Urbana, IL: NTCE.
- Townsend, M. (2002). Writing across the curriculum. In S. C. Brown & T. Enos (Eds.), *The writing program administrator's resource: A guide to reflective institutional practice* (pp. 439-452). Mahwah, NJ: Lawrence Erlbaum Press.
- Trimbur, J. (2003). Consensus and difference in collaborative learning. In V. Villanueva (Ed.), *Cross-Talk in comp theory* (pp. 461-478). Urbana, IL: NTCE. (Original work published 1989).
- Wardle, E., & Downs, D. (2011). *Writing about writing: A college reader*. Boston, MA: Bedford/St. Martin's.

Current Clips and Links

A list of links to interesting, non-commercial websites related to teaching and learning, compiled by Elizabeth Kappos. *Currents* invites reader recommendations.



Media Teaching and Learning that offers instructors information about new technologies and current topics related to education and technology. EnhancEd enables educators to discuss knowledge about and approaches to teaching with these technologies. The site has a blog-like structure that supports teaching and learning with technology, using strategies such as collaborative workspaces, podcasting, and YouTube, both in and outside of the classroom.
<http://ccnmtl.columbia.edu/enhanced/>

Enhanced is a Web site maintained by the Columbia Center for New

Center for Teaching, University of Iowa The objective of the Center for Teaching is to “promote and support efforts to enhance instruction at the University of Iowa.” The Center encourages the development of teaching skills and reinforces the culture of teaching, such as helping with the design of a first-year seminar or offering resources for new faculty. Most of its teaching materials, such as concept maps, cooperative quizzes, and strategies to motivate student learning, are freely available to all site visitors.

<http://www.centeach.uiowa.edu/>



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<http://www.heacademy.ac.uk/>

The League is an international organization dedicated to catalyzing the community college movement, making a positive difference for students and communities through innovation, experimentation, and institutional transformation. In order to accomplish these goals, the League hosts conferences, develops Web resources, conducts research, produces publications, and leads projects. Some resources available on the website include “Innovation Express” articles and a Teaching and Learning forum.

<http://www.league.org/>



The OpenCourseWare Consortium is a global collaboration of hundreds of higher-education institutions and organizations creating open educational content using a shared model. OpenCourseWare (OCW) is a free digital publication of high quality university-level educational materials. The Consortium's

shared vision is to make these materials accessible to all who have a desire to learn. The Web site explains the membership structure, lists, and links to the institutional members, allows visitors to search courses published in more than ten languages, and hosts online communities and projects.

<http://www.ocwconsortium.org/>

From the Book Review Editors

Sean C. Goodlett and Matthew Johnsen

The book reviews in this issue of *Currents in Teaching and Learning* introduce the practical implications of recent cognitive research for educators. The first review, concerning *How Learning Works: Seven Research-Based Principles for Smart Teaching* (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010), presents a compelling argument for why such books are becoming more numerous at this time, when interdisciplinary research is making strides and the call for educational best practice is becoming louder. *Brain-Based Learning: The New Paradigm of Teaching* (Jensen, 2008), reflects another approach that provides recommendations for the classroom, for the curriculum, and for assessment at all educational levels.

With this issue we welcome Sean C. Goodlett from Fitchburg State University, who joins us as co-editor of the Book Review section. We continue to seek a balance of “current” and “classic” titles and invite you to consider contributing a review to *Currents*. Please do not send unsolicited reviews; instead, write to inquire about our list of books for review, or to let us know if you have a particular title in mind.

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Principles to Teach By

Jennifer Berg

How Learning Works: Seven Research-Based Principles for Smart Teaching. By Susan A. Ambrose, Michael W. Bridges, Michele DiPietro, Marsha C. Lovett, and Marie K. Norman, with a foreword by Richard E. Mayer. Jossey-Bass, 2010, 336 pp., \$38.00 (HC), ISBN 978-0-4704-8410-4.

A number of books published in the last five years have made use of research in cognitive science to improve the teaching we do by describing how students learn. In the last year alone three such books have ended up on my shelf. One reason for this surge is the relatively recent development in cognitive science, which draws from the fields of psychology, artificial intelligence, philosophy, linguistics, and anthropology. A second reason is the increased call for accountability in education and the related need to identify, as scientifically as possible, “best practices.” *How Learning Works* aims to leverage the research on what factors influence learning into principles that faculty can use to make choices in their teaching. The authors, who are from the Eberly Center for Teaching Excellence at Carnegie Mellon University, distill decades’ worth of research into seven such principles.

The principles are derived from the authors’ own research in cognitive science and hands-on work with faculty. The book thus manages to balance the academic and the practical. The principles comprise the belief that prior knowledge can help or hinder student learning; that the organization of knowledge influences learning; that student motivation determines, directs, and sustains learning; that mastery requires the development and integration of component skills as well as knowing when to apply those skills; that practice of skills must be both goal-directed and coupled with targeted feedback; that students’ level of development and the climate of the course influence learning; and finally, that self-sustained learning requires reflection and modification.

Each chapter considers a principle and begins with a description of two situations—typically classroom dilemmas—that highlight the principle at stake. This is followed by a brief overview of the principle, which is then developed in detail when the research behind the principle is explored. Chapters end with practical strategies for the application of the principle in the classroom.

Jennifer Berg is an Assistant Professor of Mathematics at Fitchburg State University, where she has just completed a term as Faculty Co-Director of the Center for Teaching and Learning. Her research interests include representation theory and mathematics education.

The dilemmas described at the opening of each chapter will be familiar to many faculty and are used as touchstones throughout the chapter. This lends a case-study feel to the text. The summary of the research is more varied. In some chapters ideas from a wide range of fields are discussed (keeping the practical implications always in sight), while in others pedagogical theory is developed beyond what is useful. The chapter on student development and course climate, in particular, devotes a large amount of space to describing a model of student development, while the connections to teaching strategies never emerge. The strategies presented in each chapter are quite extensive, which means there are many ideas that faculty can choose from depending on their discipline or teaching style.

The seven principles, while presented linearly, are often cross-referenced, and this interdependence creates a web of principles that faculty can use to support student learning. For example, a late chapter that discusses how students become self-directed learners connects to the first chapter on activating students' prior knowledge. In the earlier chapter the focus is on how faculty need to be aware of how much and what type of prior knowledge students bring to the class in order to leverage that prior knowledge into further learning. In the later chapter the authors refer to the idea that students need to develop the skills of assessing their own prior knowledge and of applying that knowledge to new tasks.

Similarly, the chapter on student motivation is linked to the chapter that addresses how the students' level of development and the course climate influence learning. Here we learn that student expectations of success are influenced by the climate of the course. The dilemma that opens the chapter is that of the well-intentioned faculty member who avoids calling on female students so as to not "put them on the spot," which unintentionally lowers the female students' own expectations of success. The authors often strike the

correct balance: they develop the ideas generated by the research while not getting lost in details that will obscure their practical value for faculty.

Refreshingly, the book ends with a review of the seven principles as they apply to faculty seeking to become better educators; this review serves as a good summary of the principles and a reminder that, like our students, we should aim to be life-long learners.

As a mathematician, I'm keenly aware that books providing advice on teaching are often aimed at those teaching in the humanities; but not so with this book. Almost all of the suggestions are discipline-independent, yet without being so general as to lose their utility. The structure of the book, both at the chapter level and as a whole, displays a comprehensive approach to effective teaching, and the authors do an excellent job straddling theoretical and practical considerations.

There are, however, occasional cracks in the coherence of the book, especially when conflicting research and pedagogical strategies are proposed. This occurs most notably between chapter two, which treats the importance of teaching students organizational structures for knowledge, and chapter four, which is focused on what students need in order to develop mastery. In breaking up the principles as they do in these two chapters, the authors are silently taking sides in a controversy in cognitive science. The controversy is between the primacy of organizational structures for knowledge and the primacy of factual knowledge. That the authors dedicate an entire chapter to providing organizational structures for students hints at their preference.

More telling is how the authors approach chapter four, where one of the steps outlined for students developing mastery is acquiring component skills. For example, to graph a function by hand accurately, students must use the component skills of factoring, taking the derivative, taking limits, and solving equations. The strategies proposed in this chapter focus on how faculty can become aware of the component skills

required for a task, but the author avoids examining the unfashionable idea that students may need to practice rote skills before they are able to develop deep organizational structures for their knowledge.

A similar book by Daniel T. Willingham (2009), *Why Don't Students Like School?: A Cognitive Scientist Answers Questions about How the Mind Works and What it Means for Your Classroom*, has the same goal as *How Learning Works*—that is, to use research in cognitive science to improve teaching. Notably, Willingham uses some of the same research that is presented in *How Learning Works* to support the principle that “factual knowledge must precede skill.” While such conflicting perspectives should be expected when looking at the complex process of learning, I was disappointed that the authors of *How Learning Works* chose to avoid mentioning the disagreement.

The thoroughness of *How Learning Works*, which is drawn from the extensive experience of the authors inside the classroom and in working with college faculty, as well as the breadth of research explored in the text, make it an excellent resource for faculty who are interested in developing their teaching. Faculty who are in the early stages of their development may find the abundance of practical suggestions overwhelming, but they would benefit from using the principles developed here to frame their teaching. More experienced faculty will benefit from the extensive suggestions, as they are more likely to know how to select a few suggestions and integrate them into their teaching toolkit. These same faculty will also find that the seven principles are useful categories of analysis when thinking through course activities or reflecting on challenging classroom situations. ■■

References

- Willingham, D. T. (2009). *Why don't students like school?: A cognitive scientist answers questions about how the mind works and what it means for your classroom*. San Francisco: Jossey-Bass.

Brain-Friendly Education

Matthew Johnsen

Brain-Based Learning: The New Paradigm of Teaching. By Eric P. Jensen. 2nd edition. Thousand Oaks, CA: Corwin Press, 2008. 288 pp., \$39.95 (PB), ISBN 978-1-4129-6256-8.

Given the rigors of teaching and research, many higher-education faculty may find it hard to keep abreast of the literature in their own discipline, let alone find the time to become familiar with other areas of research. Over the past several decades, there has been much progress in brain research from the disciplines of neurobiology and cognitive neuroscience, biochemistry, psychology, and education, some of which provide important lessons about how human beings learn, with critical implications for how educators can shape learning encounters. Much to our benefit, Eric Jensen provides a competent overview of the implications of this research for educators at all levels with his book, *Brain-Based Learning: The New Paradigm of Teaching*. Scouring 166 books and articles, Jensen both provides a primer about how the brain works and explores a variety of implications of current interdisciplinary research about the brain for educators.

The book begins with fundamentals, describing the anatomy, chemistry and functioning of the various parts of the brain in some detail. Along the way, some myths are laid to rest (for example, assumptions about hemispheric dominance and the idea that IQ is not susceptible to change). Jensen then moves toward providing an understanding of the physiological effects of learning, including brain differences, the impact of physical movement on the brain, and the impact of stress and threat on brain functioning.

The final three sections are ripe with implications, exploring the roles of our senses and emotions in learning, “neuroscientific” perspectives on teaching and learning, and a final section which takes up possible policy implications of these findings for classrooms, curricula, and assessment. One fascinating chapter deals with motivation and rewards, providing a discussion of learned helplessness and a nuanced discussion about problems with using extrinsic rewards, advocating instead a greater focus on how educators can use intrinsic rewards. There are other important discussions about the effect size of teacher expectancy and about the malleability of IQ.

Matthew Johnsen, Book Review Co-Editor for *Currents*, is Associate Professor and Chair of the Sociology Department at Worcester State University. His areas of research include mental health services research, social network analysis and the scholarship of teaching and learning.

Brain-Based Learning has a number of attractive features. Throughout, it highlights the impact of particular findings with boxes that consider “what this means to you.” It is easy to read. There are a variety of illustrations and diagrams which allow readers with no familiarity with brain anatomy to get a handle on what may be unfamiliar concepts and terms. It covers a lot of ground, and, particularly in the final sections about curriculum and assessment strategies, it is possible to see the convergence of many of these findings into a coherent and comprehensive strategy of teaching and learning stemming from a greater understanding of the brain. Fundamentally, *Brain-Based Learning* employs a paradigm that is a potent reminder of the importance of a learner-centered approach.

However, in the earlier sections of the book, there is less a sense of an overarching conception and more of a sense of scattered findings that do not always connect well with one another. In addition, because the intended audience of this book includes teachers at all levels, faculty in higher education may find themselves hard-pressed to apply some examples to their own work. Despite this, most higher-education faculty will find this book filled with literally thousands of ideas that they *can* use to improve their teaching. ■■

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