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WRITING AND FISHERIES AND WILDLIFE MANAGEMENT: CROSS-DISCIPLINARY COLLABORATIONS

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ABSTRACT: Often students disassociate courses which are in their core university requirements – such as writing – from the courses they take for their major. Yet, increasing demands within resource management professions require graduates competent in writing and in using Internet technologies for research and publishing. Thus, there is the need for cross-disciplinary collaboration between the university units responsible for teaching writing and the units providing education for resource professionals. With this need in mind, a unique partnership was formed at Michigan State University between the Departments of Fisheries and Wildlife (FW) and American Thought and Language (ATL) – the unit charged with teaching a variety of content-based writing courses for new students. We worked together to enhance the design of FW 100 – An Introduction to FW and two sections of ATL 150; course content and readings focused on conservation history, and assignments developed writing skills. Additional learning activities enhanced Internet skills, provided outside-of-class experiential opportunities, and helped students develop critical thinking abilities. In-class assessments showed that most students noted how the assignments and approaches used engaged them in learning course content and the value of writing. Future plans are to continue this collaboration, with more students cross-enrolled in the two complementary courses. The anticipated benefits of this collaboration reach beyond those obtained by students. We have found creative ways in which to integrate writing and communications with FW education, while contributing to scholarly applications of writing across the curriculum (WAC) within natural resources fields.

INTRODUCTION

Enhancing student learning through writing, and teaching fundamental writing and critical thinking skills can be great challenges. Faculty in natural resource disciplines often feel ill-prepared to tackle such challenges, and may have learned general pedagogical theory and practice only through informal means. Yet, effectively teaching our students disciplinary conventions in writing and critical thinking are very important in resource management. We desire not only to develop graduates who are technically competent in working and communicating within their discipline, but we also wish to foster the broader education goals of preparing our students to think and participate in informed dialogue about their own writings and those of important scholars in resource conservation, such as Aldo Leopold, Rachel Carson, and many others.

These challenges have been thoroughly outlined in the scholarship of the Writing Across the Curriculum (WAC) effort to reform post-secondary education. Early work in this arena focused mainly on recasting the role of writing in the learning process; early adopters of this approach were faculty in hu-

manities and colleges of arts and sciences, who began to use writing-as-learning strategies in courses in the 1970s and 1980s (Jones and Comprone 1993). Presently, however, the writing-to-learn methods are being integrated with research and discourse on the role of writing within specific disciplinary communities (Blank 1996, Jones and Comprone 1993).

This so-called “next stage of development in WAC” is functioning to “foster integration among the areas of program administration, pedagogy, and research...[and will] link faculty, graduate students, and discipline-specific” research and teaching across the curriculum (Jones and Comprone 1993: 63). Specifically, during this phase of scholarly thinking about WAC, of critical importance is increasing the emphasis on “dialogic interaction” between faculty in science disciplines and in writing, and creating collaborations designed to carry out or create new knowledge as well as to form new teaching strategies (Jones and Comprone 1993: 64). In short, cross-disciplinary collaboration is one answer to the challenge of better preparing students, through writing and thinking about writing, to function effectively as resource management professionals and as educated citizens of a complex world.

Rooted in this scholarship, we have pursued an unique cross-disciplinary collaboration between the Departments of Fisheries and Wildlife (FW) and American Thought and Language (ATL) at Michigan State University (MSU). The Department of ATL is the MSU unit charged with teaching the entry-level writing courses within the content areas of American literary, historical and cultural studies. Although at many universities, making the link between the writing/composition teaching units and the disciplinary units remains a challenge (Jones and Comprone 1993), this link at MSU is greatly enhanced by another, service-oriented unit which works closely with ATL – the Writing Center. At the Center, MSU students can engage with other students (writing consultants) in conversations and reflections about their own writing. In addition, the Writing Center is the primary group on campus that provides faculty support through developmental workshops on writing and teaching/learning about writing. The purpose of this paper, then, is to share with colleagues in resource management the story of our ATL-FW cross-disciplinary collaboration. This collaboration was designed to improve the first-year student's learning experience in writing and thinking about FW management history and current conservation and environmental issues.

STUDENTS' NEEDS IN ENTRY-LEVEL FISHERIES AND WILDLIFE WRITING INTENSIVE COURSES

Students in Fisheries and Wildlife (FW) at Michigan State University (MSU) arrive on campus with varied levels of preparation to pursue college level work in writing, and in their own discipline. Of the 100-110 new FW students each year, about one-third are freshmen, and the other two-thirds typically transfer into FW from community colleges, MSU or other colleges.

Most FW students are from Michigan. State education standards require course work in English/Language Arts throughout high school, yet their varied exposure leaves some students coping with a difficult transition between high school level writing, and the writing expectations at the college level. In research conducted through MSU's Writing Center, new college students have reported many differences between expectations for high school writing vs. college level writing. Undergraduates reported that, in comparison to the high school level five-paragraph essay (in which they filled in a standard format with other peoples' ideas), college writing assignments more often asked them to conduct original research, provide greater elaboration, and communicate complex ideas, issues and understanding (Thomas 1995).

Given these challenges in making the transition from high school to college, and given that students in natural resources disciplines today may have fewer FW-related field or outdoor experiences than their peers in previous student cohorts (Craven et al. 1996), students may have difficulties reading, inter-

preting, writing about, and critically reflecting on FW-related writings traditionally used in entry-level courses (such as Leopold's *A Sand County Almanac*). In a survey of new FW students, we found that although nearly all have read Thoreau, and many have read Theodore Roosevelt's writing, only about one-third have previously read Leopold; fewer than one-fifth have read Rachel Carson's or John Muir's works. And only a handful have read any novels by James Oliver Curwood – an early conservation leader in Michigan.

First year students at Michigan State University are required to take a one-semester, four-credit writing course to satisfy the first tier of the university's writing requirement. Students who have declared Fisheries and Wildlife (FW) as a major are also required to enroll in FW 100, Introduction to Fisheries and Wildlife (1 credit). This writing-intensive course introduces students to management principles and selected topics (e.g., conservation history), career opportunities, and resources at the university. In addition, FW 100 develops collegiality among incoming peers, even though it serves over 150 students.

Often students disassociate courses which are in their core university requirements – such as writing – from the courses they take for their major. Additionally, students in science-related fields may not be aware of how the writing they will do in their careers and disciplines compares and contrasts with writing types and conventions used in traditional English or composition classes. Showing students that there are strong linkages between the two types of courses is important because of the amount of writing required for biologists and managers. Students may be under the erroneous impression that as FW majors they will not be writing much at all in their major courses, or even in their careers.

THE INSTITUTIONAL ENVIRONMENT, THE FACULTY AND THE TEACHING COLLABORATION

Meeting the needs of incoming freshmen as they make the transition to college-level learning and living is an important initiative at MSU and on other campuses. Likewise other recent university initiatives in improving student access to computing technology and in enhancing active learning opportunities are re-shaping the academic institutional environment. Rather than looking at these university-wide efforts as barriers to our abilities to prepare technically competent FW professionals, we have viewed these as providing for new “teachable moments” – opportunities for creatively bringing relevant information to students in order to help them develop needed educational background. Furthermore, institutional change brings renewed support for collegial interactions across disciplines such as FW and ATL.

This collaboration developed through an evolutionary process. Charnley provided leadership for a College of Agriculture and Natural Resources (CANR) and ATL writing across the cur-

riculum partnership called PROJECT WRITE. This effort, between 1989 and 1992, directly affected more than 4,500 students in a wide range of courses in the CANR at Michigan State University. More than anything else, it demonstrated that faculty working in various disciplines can help design and incorporate effective writing assignments that improve the ways students learn in the class and, at the same time, enhance the teaching of the subject matter. (Charnley et al. 1993, Charnley et al. 1990). In addition, Dann has participated in a Lilly Endowment Teaching Fellows Program, and in The Faculty Writing Project at MSU. In both, she focused her own learning on the issues of more effectively using writing as a learning tool, especially in large courses such as FW 100. Her areas of scholarship are in research in human dimensions of fisheries and wildlife, including communications and education program design and evaluation. Charnley's scholarly field is history, with specializations in oral history and Michigan history. As an active sportsman, he has developed an interest in the history of hunting and fishing in Michigan, along with a scholarly expertise by studying novelists like Ernest Hemingway and James Oliver Curwood, authors with strong ties to Michigan who have written many works dealing with fisheries and wildlife themes.

In response to student needs, then, faculty in FW and ATL desired to establish a mechanism to link the two, freshmen-level writing courses. While maintaining the integrity of both courses, we coordinated readings and writing assignments. This collaboration was designed to enhance the course design and assignments for first-year fisheries and wildlife students and for students in the ATL course. The conservation issues raised in FW 100 echo and point to the ways in which American writers have written about them in literary and other cultural texts. Those issues are already reflected in the current scholarship in American historical and literary studies, and became highlighted in this collaboration. Being able to link the issues raised in the FW course to narratives and stories within the ATL course allows those issues to come alive in more complex ways. It also allows conversation about skills in oral and written communication necessary for success in FW careers.

GUIDELINES FOR WRITING AND LEARNING USED IN OUR COLLABORATIVE EFFORT

Several guidelines (adapted from WAC scholars and practitioners and from many other sources) provided the basis for our assignments in the two classes. Many of these guidelines are tenets we share directly with our learners as we discuss the role of written communications, both within the disciplines of FW and in cross-disciplinary dialogue:

- “Writing makes thoughts visible.”—Dr. Raymond Smith, Indiana University

- “All writers make mistakes; good writers do everything they can to correct those mistakes.”—Dr. Leonora Smith, Michigan State University
- “Use all the writer's tools available to improve your writing.”—Dr. Jeff Charnley, Michigan State University
- Short writing assignments improve with each repetition.
- Revise often and revise carefully.
- Peer review and peer editing are essential to improve writing.
- Keep writings short, direct, and original.
- Paraphrase often and always analyze sources critically.
- Write something new in each assignment.
- Make every writing your best work.

As WAC scholars recommend, these important rhetorical guidelines should be integrated with current thinking about discipline-specific conventions – and this integration should become apparent to students, so that they can function effectively in understanding the complexities of communications. Although there is little scholarly work being done on FW-specific writing, there are some important considerations to which students need exposure (Gilligan 1995, Turner 1995).

COLLABORATION IN THE TWO COURSES

Our two courses highlighted in this collaboration bring these conversations about writing alive for students. We approached these guidelines in varied ways across the two courses.

ATL 150, “Writing: The Development of American Thought,” through a 4-credit semester-long course, requires substantial writing based on extensive course readings. Students write three one page analyses of scholarly journals, three 5 to 6 page essays on course topical themes, and a final oral history paper as a culmination of a semester long research project. An additional focus in Charnley's sections is on Internet web publishing, and students publish on their MSU web pages samples of their writings from the class.

The readings chosen in the course, except for the required writing textbook, related in some way to conservation, wildlife issues or environmental themes as they have developed in American history.

Students read Roderick Nash's American Environmentalism: Readings in Conservation History, Iola Fuller's novel, The Loon Feather, Caroline Kirkland's A New Home, Who'll Follow?, Henry David Thoreau's Walden, and James Oliver Curwood's The Grizzly King. Using a related feature film

as a cultural text provided another writing assignment. Students viewed *The Bear*, the 1989 Tri-Star film's adaptation by director Jean Jacques Annaud and wrote an essay based on a comparison with Curwood's 1916 book.

Related directly to these readings, we developed two enrichment activities outside of class for students in both courses. In the first, we arranged a Saturday field trip to Curwood Castle, the writing studio of James Oliver Curwood, in nearby Owosso, Michigan. Students were able to tour the studio and learn more first-hand about this famous wildlife novelist and his writings. Students commented how much the field trip helped them understand the novel, Curwood's perspectives on hunting and wildlife, and the development of a conservation ethic in the early 20th century. Besides this, we arranged an evening presentation entitled, "Wildlife and Photography: A Transcendental Connection." We linked some interesting comments by Thoreau in his book, *Walden*, with a photo lecture by a nature photographer and asked students later to write some comments about their experience. One student wrote this:

"With bicycles flying, cars charging, and the streams of people all focused on their mission, I often lose sight of what is important. I flow with the crowds, walking in a trance from class to class without stopping to take the time to enjoy life. The presentation on the transcendental connection between nature and photography sent a message that should be heard by everyone. Thoreau stated that the universe is wider than our views of it. People tend to become so focused on one item they never broaden their horizons or opinions. With the quiet confidence that nature lovers have, [the photographer] takes us on a journey of tranquility. Amidst the busy life that college brings, he gives us an hour to escape to search our souls and clear our minds. Intricate details of a spider hidden in the sand make us realize often beauty can be found if you take the time to look."

Most students commented they expected the evening to be boring and dull, but they were pleasantly surprised and most indicated they even enjoyed it! Their subsequent writings were descriptive, thoughtful, imaginative, and thought provoking. What more could instructors ask of these beginning college students? These outside-of-class learning activities helped break down some of the student/teacher barriers that so often intrude in a modern mega-university setting where an individual freshman can get lost easily amid 45,000 other students.

In FW 100, an Introduction to Fisheries and Wildlife, three writing assignments help students work toward achieving course goals; these consisted of writing journal, preparing an abstract based on field observations, and preparing a cover letter and resume. These three writing "pieces" were assigned within the context of helping the student develop a Professional Portfolio; this provides students with direction, pur-

pose and audience for the individual written works, and gives these short assignments an important career-related context. Furthermore, these assignments allow students great ownership in their own learning; they choose subjects of interest, get to spend time outdoors, make connections with self-selected natural areas (some of which are their newly-discovered favorite locations on this huge campus), and learn the rudiments of scientific observation and writing. All of these help the students make their writings "their best work."

More importantly, peer review and editing processes were built into the abstract assignment. Students exchanged an early draft with a partner in an in-class, interactive exercise called "The Fish Bowl," (a teaching strategy encouraged by MSU's Writing Center). Through student-generated questions during the Fish Bowl, we discussed the most common writing mistakes and how to correct them. Then, students use peer comments to revise their work. Students turn in the final abstract as well as the rough drafts, with students' own markings and those of their peers. Student-to-student (peer-to-peer) collegial conversation about their first-ever abstract brings alive the point that these interactions about peers' writings are valued in the FW management community (and this activity makes a huge class in a large lecture hall much more interesting and dynamic than a stale lecture!)

Several very short, in-class learning experiences also relate to FW 100 students the role of writing in resource management. A 1-minute writing exercise asks students to write about their pre-conceptions of the definition of FW management, and the factors influencing their interests in FW. Other participatory writing (or "investment writing") asks students to frame questions they have for guest speakers who are discussing varied career opportunities in FW and to frame questions to the instructor about course content. Answers to these questions are then woven into course lectures.

Opportunities to write via email and use Internet resources in research and writing are also important for today's FW professional. In a "Spartan Safari" assignment, students visit several campus resource offices to learn about references available to assist their studies, their library research, and their career development. Students are asked to "visit" several websites for FW agencies, then send an email message to the instructor highlighting their favorite website, something about their background, or comments about FW 100. Another short writing activity engaged the students in their reading of Leopold, and asked them to respond to Charnley's online story entitled "The Lure" (<http://www.msu.edu/user/charnle2/lure.html>), an assignment students in ATL 150 also wrote using email. We cite a couple of student comments about this assignment, as follows:

"I did read "The Lure" and thought that it was a really interesting piece. I really don't think it was about a lure, but rather the memories a lure can bring of past fishing trips, or any past

memories connected to those trips (like the author's grandfather). I thought it was a good piece over-all. In comparison to the "Alder Fork," the subject of memories comes up again. A fisherman has many memories and tales to tell of his adventures while fishing, and these are the most valuable things he takes home with him after he's done fishing."

"The Lure' was a short story that involved someone looking way beyond something. In this case it was a fishing lure that meant a lot more to someone than just a lure. It was an artifact that when he looked at it brought memories and allowed him to reminisce about past experiences and people. This story really hit home for me. There are a lot of little things that I take for granted and don't really appreciate as much as I should. I thought it was really cool that something as simple as a lure can mean so much to someone. There is the same idea behind 'The Alder Fork' by Leopold. Instead of going out and trying to catch the biggest fish possible and not being happy without it, he enjoys the little things about being out in nature. He takes the time to stop and think about things and remember what they mean to him."

Not all the student comments were favorable. For example, one misanthrope wrote:

"This story is about this guy's memories about fishing with his family and how important those memories are instead of whether or not you catch a fish. I didn't much like the story. I thought it was cheesy and overdone. This story is just like Leopold; he tries to use all this astounding imagery and put all this feeling and such into everything, but it's so overdone that it's just annoying."

It was refreshing to see critical analysis in many student responses! Experience has shown that when these writing assignments are "short, direct and original," many students write often and elaborate on their thoughts! Another tremendous benefit is that faculty can glean valuable insight into students' thoughts, learning processes, stumbling points on important concepts or points made by speakers, and reactions to course format and content.

WHAT WE HAVE LEARNED, WHERE WE ARE HEADED, AND FURTHER RECOMMENDATIONS

In 1997 (fall semester), we had no students who were dually enrolled in both courses (as we had intended). Instead, there were 52 students in 2 sections of Charnley's ATL 150 course, one of whom had previously taken FW100; there were 158 students in Dann's FW 100. We attribute this to the difficulty of advising students during their summer orientation prior to their first enrollment; since this pilot collaboration was developed late in Spring 1997, few students or faculty advisors had received word of this new effort. This should be easy to remedy in the future. So, in this "experimental" year, we had the

luxury of getting to know each other's views on writing, readings, and history of conservation and FW management. We discussed assignments, pedagogy, and content in periodic collegial meetings. We plan to do more!

Certainly, although as collaborators we had the challenge of advising students into dual enrollment in FW 100 and ATL 150, we experienced many benefits to this unique partnership. One benefit is in having non-FW majors exposed to scholarly thinking and writings in conservation history – with specific reference to individuals (such as Curwood) with Michigan roots.

Student course evaluations in ATL 150 were overwhelmingly positive. The numbers of readings and amount of writings assigned were substantial. Sample student comments (given on the required ATL student evaluation form) in response to the general question, "Did the course increase your understanding of American cultures, ideas, and experiences?," included the following written comments:

"Yes, I had never thought to link environment with the world of literature before; it was a refreshing experience."

"Yes, this course made me look at things such as wildlife, native Americans, pioneers, and farmers in a way that I wouldn't have before. I am more aware of the differences and similarities in different cultures."

Using another evaluation instrument, Dann and Charnley asked students in both FW 100 and ATL 150 to respond to this question: "In general, how did this course affect your overall learning about fisheries, wildlife, and important issues related to our natural resources?" Three of Charnley's students in ATL responded with:

"It made me more interested in the topic and made me want possibly to pursue a career in wildlife."

"I am a fisheries and wildlife major, and it helped a lot. It broadened my horizons. It really didn't get into nature issues, but it did talk a lot about nature which was very interesting and unique." [NB: This ATL 150 student had taken FW 100 in a previous semester.]

"This course affected me because I would not have had the opportunity to learn these things on my own. I am not particularly interested in FW, so in that respect I am glad that I at least got a chance to be exposed to it. It was an interesting experience."

In-class assessments of student engagement in learning indicate a growing awareness of the value of writing in the field of FW management and in their own careers. Students reported that writing helped them learn what will be expected of them.

Even more importantly, many FW 100 students reported that they were most engaged in learning when participating in the field journal or other writing assignments. Most students noted that the writing experiences were new, although several also noted that they had already done some of the discipline-specific writing (abstracts or resumes). FW 100 students had the following comments:

“I feel that the writing assignments were a good part of this course. I felt that they were applicable to FW coursework and to prepare for FW careers. The field journal was a great experience, to practice a different style of writing while enjoying the outdoors!”

“I gained quite a bit from these writing experiences. They were varied, especially the abstract. It was hard to write about something scientific like that, but it was also fun. I learned there is more to FW than just the animals and their habitat.”

“These writings did affect my learning. The writings made me think in a whole new way. It is a lot different than just writing an essay. It was good for me to have that change and make myself think differently. In general, I gained a lot from the writing experiences. I will be able to tackle future writing assignments with a lot broader base and be able to incorporate different writing styles.”

Although not all comments were as positive as the comments above, some of the critical comments suggested ways of improving the writing assignments in the future. (For example, one person remarked “I don’t think the limited field experience and abstract can really be considered scientific. However I think it’s a good idea to be approached...in a 3-credit course.”)

How did FW 100 students react (in writing) to their readings? The highest proportion of students reported that Leopold’s *A Sand County Almanac*, and Rachel Carson’s *Silent Spring* were the most informative readings. Several students commented that they were previously unaware of the connection of Carson’s writings to early research at MSU regarding the impact of pesticides on songbirds; one student wrote “I was fascinated that this all started here at MSU.” Another said “I found MSU’s involvement in the 1950s with the robin counts very informative and exciting...I had never really realized what implications pesticides could have.” Some students specifically commented on other short articles about Michigan’s conservation history (e.g., a magazine article about the passenger pigeon in Michigan). Regarding Leopold and overall learning in FW 100, students wrote these passages:

This “really showed me how differently people looked at wildlife management in the past...it also showed me how far we..have come in regulating wildlife. I think we are headed in the right direction.”

“The most fascinating part of the book was the section on the land ethic and how we (the public) have to evolve ecologically or suffer the consequences.”

“I learned that the history of conservation is as important as the future when making decisions on management now.”

Another astutely noted that she learned from Leopold that “you have to live the work you do.”

What lies ahead in this cross-disciplinary collaboration? In the future, we plan to work together to:

- Continue to build upon our cross-disciplinary model designed to help freshmen, and to integrate content and teaching strategies across FW 100 and ATL 150. Our model serves to personalize learning for students, and to expand their thinking, reading and writing abilities related to fisheries and wildlife subject matter—no matter the ultimate career choice of the student. Furthermore, our model provides first-year students the opportunity to integrate Internet research, reading, and publishing—critical technological skills which will be needed in the future by all professionals.
- Advise more students to cross-enroll in FW 100 and ATL 150, and continue to provide joint experiential enrichment activities (e.g., field trips, guest presentations) outside of classes.
- Redesign FW 100 as a 3-credit course offered both fall and spring semesters. This will enable us to intertwine FW 100 more thoroughly with ATL 150. FW 100 students and faculty will now be able to use a discussion section (with only about 25 students) to explore readings in greater depth.

Future cross-disciplinary collaboration will have many long-term benefits. The cross-disciplinary dialogue we have begun should help advance the scholarship of teaching in FW, of teaching in conservation history, and of the writing across the curriculum (WAC) effort within natural resources education. In this spirit, we look forward to future collaborations, and to learning from our students!

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LITERATURE CITED

- The Bear*. 1989. Directed by Jean-Jacques Annaud, Claude Berri Producer. TriStar Pictures, Inc..
- Blank, Gary. 1996. A Graphic Model for Incorporating Communications Development Within Disciplines. *Proceedings of the First Biennial Conference on University Education in Natural Resources*. The Pennsylvania State University, School of Forest Resources. Pp. 59-65.
- Carson, Rachel. 1962. *Silent Spring* (chapter entitled "And No Birds Sing"). Boston, MA: Houghton Mifflin Company.
- Charnley, Jeffrey. 1988. *The Lure*. Online Hypertext Essay published at <http://www.msu.edu/user/charnle2/lure.html>
- Charnley, Jeffrey, Leonora Smith and William McCall. 1990. *Project Write Source Book: Writing Assignments from the Faculty of the College of Agriculture and Natural Resources*. East Lansing, MI: College of Agriculture and Natural Resources, Michigan State University.
- Charnley, Jeffrey, Leonora Smith and William McCall. 1993. Project Write Case Report: Writing to Learn in Agriculture and Natural Resources Courses. *NACTA Journal* [National Association of College Teachers of Agriculture]. Volume XXXVII No. 2 June 1993. Pp. 32-35.
- Craven, Scott R., Donald H. Rusch, and Carl A. Batha. 1996. Wisconsin student hunter project. *Trans. N. Amer. Wildl. and Natural Resources Conf.* 61: 395-400.
- Curwood, James Oliver. 1916. *The Grizzly King*. New York: Grosset & Dunlap, Publishers and the 1989 edition entitled *The Bear: A Novel*. 1989. New York: Newmarket Press.
- Fuller, Iola. 1941. *The Loon Feather*. New York: Harcourt Brace.
- Gilligan, Matthew R. 1995. Improving your technical writing. *Fisheries* 20(5): 36.
- Herrington, Anne J.. 1981. Writing to Learn: Writing Across the Disciplines. *College English*. Vol. 48 1981. Pp. 377-387.
- Jones, Robert and Joseph J. Comprone. 1993. Where Do We Go Next in Writing Across the Curriculum. *College Composition and Communication*. Vol. 44 Fall 1993. Pp. 59-68.
- Kirkland, Caroline. 1990. *A New Home, Who'll Follow? or Glimpses of Western Life*. New Brunswick, NJ: Rutgers University Press. [The first edition was published in 1839.]
- Kurtz, William B.. 1996. An Integrated Approach to Teaching Natural Resources Policy in a Writing Intensive Format. *Proceedings of the First Biennial Conference on University Education in Natural Resources*. The Pennsylvania State University, School of Forest Resources. Pp. 52-58.
- Leopold, Aldo. 1966. *A Sand County Almanac with Essays on Conservation from Round River*. New York: Ballantine Books. [Originally published in 1949 by Oxford University Press]
- Nash, Roderick. 1990. *American Environmentalism: Readings in Conservation History*. New York: McGraw-Hill, 3rd edition.
- Tchudi, Stephen. 1986. *Teaching Writing in the Content Areas: College Level*. Washington, D.C.: National Education Association.
- Thomas, Sharon. 1995. What we can learn from listening: College students talk about writing. *Language Arts Journal of Michigan*, Fall 1995, pages 74-79.
- Thoreau, Henry David. 1948. *Walden*. New York: Holt, Rinehart and Winston. [First published in 1854.]
- Turner, Spencer E. 1995. Writing the perfect abstract. *Fisheries* 20(10): 46.