

Time to Write

The Newsletter of the L&S Program in Writing Across the Curriculum

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Writing in Statistics?!

Robert Wardrop
Statistics

In addition to all the great reasons to have students write, reasons that are relevant in many different fields, I require my students to write because without writing assignments I can't possibly teach statistics!

I regularly teach statistics 301, *Introduction to Statistical Methods*. Nearly all students take the course to satisfy one or more of the following requirements: campus QR-B, college math, or a school or departmental statistics requirement. A small number of students take 301 because they have discovered that it will help with a research project or job in the major. Finally, a very few enroll because of an inexplicable (perhaps innate? perhaps pathological?) interest in statistics.

I find this state of affairs to be extremely frustrating and annoying.

I love to learn about the world. I enjoy learning passively by, for example, reading, but I also enjoy active learning, by doing. And learning by doing can be greatly enhanced by even a basic understanding of statistics. It pains me that few people understand this basic feature of my field.

Sadder yet, few people who have completed an introductory statistics course realize *how* to use statistics to learn about their world. I tell my students

that the fundamental goal in my course is to enable them to discover that statistics can be an important tool in their daily lives.

One way to work towards this goal is through the use of effective examples in lecture. But more is needed. Therefore, I require each student to use statistical ideas to study a problem in his/her personal life. Once a project is completed, the student, of course, needs to convey the results to me. Therefore, each project culminates in the submission of a written report.

I ask students to choose their own topics to investigate. Often they choose projects related to their majors. One advantage of this is that it allows students to test the theories they learn in their major coursework. For example, many of my students are business majors. They might choose to compare different sales strategies and their effects on customers.

Still other topics include personal hobbies such as sports, games, and pets. Students generate data that examine issues such as the following: Is more expensive sports equipment worth the extra money? What external factors influence my game performance? Which techniques yield better results? These are questions that can be answered only through statistics. In other words, students actively pursue whether statis-

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Students: Writing Is Primary Source for Learning

Alice J. Robison

Writing Across the Curriculum

What do students say about their writing after completing several writing-intensive courses?

An important study conducted by researchers at the University of Hawai'i-Manoa tells us that many students value writing just as much as their instructors hope that they do.

In the late 1990s, Thomas L. Hilgers and his research team sought to understand how students reflected on their writing experiences within their particular majors and disciplines. Upon completion of their required five-course writing-intensive sequence, not only are students at Hawai'i-Manoa aware that learning to write and communicate clearly is important, but also that they understand the conventions and standards of their particular fields and disciplines.

Through a series of interviews with more than three dozen students enrolled in writing-intensive classes

within their majors, students reported a substantial commitment to using their writing to facilitate increased confidence in their major course subjects. The researchers commented that "it was almost as if doing writing assignments in the major involved making an investment in who the student desired to become. Writing, in other words, seemed to be part of professional identity-building."

Researchers were able to infer from students' reports that, on their own, students were expected to discover new ways of tackling writing problems while engaging in rhetorical problem-solving strategies. Overall, students said that writing assignments enabled them to learn more—and thus feel more knowledgeable—about their major course content.

Hilgers and his research team point out that these findings significantly contrast with those of a 1995 study that reports on high school upper classmen nearing their graduation dates. In that study, students' "sole rhetorical strategy was typically to 'find out what the teacher

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What Did Students Say About Writing Within Their Majors?

Seeking to document what students say they know about writing and how disciplinarity affects students' understanding of writing tasks, researchers at the University of Hawai'i-Manoa found the following interesting contrasts:

- As many as 76% talked about course readings as influential texts used in the writing process, but 82% referred to the "assignment sheet" or "paper guidelines" as the text they use most during the writing process.
- Though 65% perceived writing instruction in the major as preparation for thinking and writing in the work force or in graduate school, 55% further claimed that writing experiences in their courses paralleled the writing tasks in their anticipated professional lives.
- 68% claimed they had established their own goals for a writing assignment, yet only 23% stated that getting an "A" was their sole writing goal.
- 82% of those interviewed saw the instructor as the primary audience for their writing, but 56% were also aware of (and thus writing for) one or more non-teacher audience(s).

Biocore Gets to the Point

Michelle Harris
Biocore

The Biocore program is killing many birds with one stone.

The teaching staff of the Organismal Biology honors lab course Biocore 324 has developed Writing-Intensive assignments that incorporate many good pedagogical techniques for written and oral communication. At the same time, these assignments meet many of the course's Writing-Intensive requirements.

Before their final papers are due, students are asked to use PowerPoint software as a tool for communicating their research to the class. This enables them to receive oral and written feedback on their work, better anticipate audience expectations, and revise their writing before they turn in their final papers. And, the students comment that they learn more by being expected to present their ideas in both oral and written form before they turn in a final paper.

As members of semester-long research teams in Biocore 324, students are asked to work together to develop and present their findings from each of three independent research projects throughout the semester. During students' development of a 15-minute presentation, each research team is essentially putting together an exceptionally detailed outline of its final paper the week before it is due. The slide version also allows the instructional staff and peer reviewers to give the teams feedback on their analyses and conclusions before they have written their final papers.

Guidelines for the presentations stress that each group must use the slides in order to convey a research question, a biological rationale for the hypothesis, the hypothesis itself, research methods, and results and discussion.

During the presentations, students in the audience are asked to provide written feedback for each research team. I meet with the TA after class to discuss our impressions of each presentation and to assign final grades. TAs then prepare written critiques for each research team.

While the PowerPoint assignment meets many of the requirements of a Writing-Intensive course, it also demonstrates to instructors how well students understand the biological systems being tested. Furthermore, we evaluate students' ability to:

1. Convey their understanding of research topics.
2. Organize their thoughts and make conceptual connections to course content.
3. Analyze their data efficiently and come to some initial conclusions about their hypotheses.

Students are especially grateful when the instructional staff catch incorrect use of statistical tests and/or inappropriate conclusions, but this formal peer-review also gives students a window into what they will be experiencing in their profes-

sional lives. They come to see the PowerPoint assignment as a collaborative process in which they are using their writing to think about and revise their communication of research findings while

they practice their presentation skills.

Happily, students provide the Biocore staff with excellent reviews of these assignments.

As one student said, "Once

the PowerPoints were finished, it was much easier to finish our final papers." Another remarked, "After gaining feedback from class, we understood our results and conclusions better."

Because students are forced to consider their team's results and analyze them immediately, their final papers are just more eloquent versions of what they already know. I would argue that this prepares them well for successful futures as medical professionals and educators, and for the many other life science-related careers. ♦

For more on the Biocore program, visit its website at <http://www.biocore.wisc.edu/biocore>.

For more on writing in the sciences, visit the Writing-Across-the-Curriculum website at <http://mendota.english.wisc.edu/~WAC>.

Discussion

- ♦ Results support hypothesis
 - ⇒ Decreasing rate with increasing salinity
 - Osmolarity effects
 - ⇒ Decreasing total germination with increasing salinity
 - Toxicity effects

A sample PowerPoint slide

Writing In Statistics?!

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tical models apply to their personal behaviors. Their writing then allows for an interpretation of the subtleties of statistical data.

I list below the main benefits of assigning projects.

1. I learn a great deal about *who* my students actually are. I learn what undergraduates care about (not obvious to a 53-year-old statistician; many perform a great deal of volunteer work and seem to enjoy studying what they do). I learn their hobbies and pastimes. I learn their attitudes and beliefs.

2. I learn whether I have explained certain ideas well or poorly. Of course, exams serve this purpose too. But letting students write what they think is much more valuable than having them respond to my questions. (All parents have had similar experiences dealing with children.)

3. Many students remark that the projects were the best part of the course. This leaves me indescribably happy. To be sure, more than a few students satisfy only the bare minimum of the project requirement without exhibiting any enthusiasm for their topic. I think of these students as including those who have been indoctrinated into the idea that education—at least in the math sciences—is completely a case of fitting the round peg into the round hole.

4. Every semester several projects knock my socks off with the creativity and cleverness exhibited by their authors. (I've posted several excellent examples on my website. See below.)

5. I have learned that our undergraduates write very well. The written reports are, for the most part, a great pleasure to read. Surely, some of the credit must go to my colleagues across campus who teach writing to my students (the majority of my students are juniors).

In sum, asking students to present and report on their data can only go so far. I want to see evidence that they have thought about the work they have done. Writing allows them to make that extra leap, explaining why the project interests them and how they have

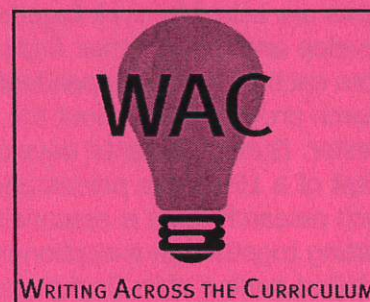
Browse Statistics 301 model projects on Professor Wardrop's website, <<http://www.stat.wisc.edu/~wardrop/>>:

- Click on [Statistics 301, Spring 2003](#), then [Five Model Projects](#).
- Click on [Research Papers](#), then [Papers on Statistical Education](#), and
 - ⇒ Small Student Projects in an Introductory Statistics Course,
 - ⇒ Student Sports Projects in a Statistics Course, and
 - ⇒ Bernoulli Trials: Do They Exist?

Interested in learning more about teaching with writing at the University of Wisconsin-Madison?

At the WAC website, you can:

- Get discipline-specific pedagogical advice for teaching with writing
- View and adapt sample writing assignments
- Arrange for individual consultations with Writing-Across-the-Curriculum staff
- Find out about training for Communication-B instructors
- Get advice about responding to student writing



And much more!

Visit us on the web:
<http://mendota.english.wisc.edu/~WAC>

Students: Writing Is Primary Source for Learning

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wants and do that.” While the Hussey study reported that high school seniors’ primary writing guide was the model five-paragraph theme, the students at Hawai’i-Manoa were instead “looking to, and accessing, multiple resources [for writing]. The very fact that they would consult more than one resource suggests that they were operating with rather sophisticated plans for accomplishing both their research and their writing assignments.”

The researchers argue that it is not just that students see writing as a tool for learning, but that it is often their primary source for learning to analyze, refine, organize, and comprehend what, how, and why they are learning the subject matter or content of the class.

It is also interesting to note that none of the students interviewed described writing as a linear process, one in which they “regurgitated facts or recorded thoughts on paper.” Students

overwhelmingly viewed writing as much more than drafting and revising. “In solving problems and seeking goals,” writes Hilgers, “students backtracked, changed tactics, and engaged in multiple sources of information and advice.”

One history major confirms that assertion: “[Writing] helps you get a perspective on what you studied. When you read something—okay, you read

“In solving problems and seeking goals,” writes Hilgers, “students backtracked, changed tactics, and engaged in multiple sources of information and advice.”

it and you sort of understand it, but when you actually have to write about it and tell someone else, in writing, it forces your mind to think of it in a new way. When you have to try to convince someone in writing, it forces you to think a lot sharper...it forces you to be even more analytical.”

Reflecting on the writing process as a whole, a chemistry major says, “I think that the writing really puts the icing on the cake where I can really put into perspective what it is I’m supposed to be seeing, what’s actually going on, and being able to put that time into thinking about it.”

Though researchers gathered data from a relatively small sample set of students, their findings indicate that, as a whole, students writing intensively in their majors are “resourceful, involved, and often deliberate in their writing decisions.” The task of writing was viewed by students in the study as a problem-solving venture, one which enabled them to gain confidence over the content of their courses. As a result, students felt that writing-intensive courses in their majors were the most significant sources of learning at the university. ♦

To read this study in its entirety, see Thomas L. Hilgers et al. (1999). “As you’re writing, you have these epiphanies’: What college students say about writing and learning in their majors.” *Written Communication*, 16.3. Available online at <http://mwp01.mwp.hawaii.edu/epiphanies.htm>.

For information on a Comm-B assessment study conducted by UW’s Verbal Assessment Committee in the spring of 1999, visit <http://www.ls.wisc.edu/gened/facstaff/commbstudy.pdf>.

Fall Training for Comm-B Instructors Offered

This August 25th and 26th, the Writing-Across-the-Curriculum Program again will offer training for instructors new to teaching with writing.

These interactive workshops, which have been offered every semester since January 1997, are designed to complement the course-specific training departments and programs may already provide for TAs in Comm-B courses.

Sessions will feature presentations by Comm-B Teaching Fellows—outstanding TAs who have recently taught Communication-B courses.

Attendees finish the training having learned to think carefully about their own methods for teaching with writing and how best to incorporate the writing pedagogies they have learned.

All Comm-B TAs and faculty are welcome, but registration is required. Please register at <http://mendota.english.wisc.edu/~WAC>. Click on “WAC Events and News” and then on “Fall Training for Comm-B TAs.”

For more information on the training, contact Brad Hughes, Director of Writing Across the Curriculum. Brad can be reached at 608-263-3823 or bthughes@wisc.edu.

WAC Welcomes Its Newest Assistant Director

After two years watching her good friend Bonnie Smith at the helm, Alice Robison stepped in last August as the Assistant Director of the L&S Program in Writing Across the Curriculum.

Alice joined UW's Rhetoric & Composition Studies Program in 2000 after completing her M.A. in English at the University of Kansas. Now three years into her Ph.D., she couldn't be happier with her choice to come to UW-Madison.

"Being here enables me to work across disciplines, participating in writing activities throughout the university," she says. "I consider myself lucky to work with so many instructors who are committed to teaching their undergraduates to write and communicate effectively."

As Assistant Director of WAC, Alice hopes to build on her predecessors' work on the program's website, continuing to provide excellent resources for instructors using writing to teach course content.

Also, she anticipates that her work with students and instructors across disciplines will play a large part in her dissertation research, which centers on technology, rhetoric, and composition pedagogy.



Alice J. Robison,
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