One More Time: Transforming the Curriculum Across the Disciplines Through Technology-Based Faculty Development and Writing-Intensive Course Redesign

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Abstract: This article describes a writing-across-the-curriculum project that was born of one university's commitment to writing and ubiquitous computing. Faculty members across the disciplines, seeing an opportunity to re-introduce WAC on its campus through a curriculum development initiative funded out of an internal teaching, learning, and technology center, engaged nearly 70 faculty members in WAC training over four years. The project and its results are described, with special emphasis on three case studies from faculty members in psychology, mathematics, and nursing, who employed WAC principles and instructional technology to infuse writing into their teaching and their students' learning.

For more than 30 years, instructors at American colleges and universities have been striving to incorporate writing-across-the-curriculum/writing-across-the-disciplines initiatives into their programs of study. Informed by the work of Barbara Walvoord and her colleagues, who organized the one of the first writing-across-the-curriculum (WAC) seminars in 1970 at Central College in Pella, Iowa (Walvoord, 1996), many WAC-oriented projects have been undertaken to begin, complement, or improve upon the writing-intensive work that may (or may not) take place in the first year of the college curriculum. While occasionally the result of institution-wide change, these efforts have more often been driven by small groups of faculty working quietly behind the scenes to transform the culture at their institutions, using limited or existing resources in new and innovative ways. The infusion of technology into the academic environment—mobile computing programs, online courses, course management systems, distance-learning initiatives—can change the way writing-across-the-curriculum initiatives are structured. However, concerns about the impact of technology on teaching and learning have spawned heated debates, and these will only intensify as more colleges and universities consider such options as ubiquitous computing, laptop programs, the adoption of course management systems, and online courses. One concern is that the technology is pushing curricular change without thoughtful and carefully assessed planning, simply because it is "hot," rather than being used as a tool to advance teaching and learning in ways that are pedagogically sound. As Catherine M. Gynn observes: "The new maxim in the world of technology enhanced learning is that teachers must let curriculum drive technology, and should beware of letting technology drive curriculum. The goal in designing technology enhanced curriculum is to use tools that are appropriate to the needs of the learning experience. A sound pedagogy involves sound use of

technology" (p. 1, 2001). This is especially true when considering writing across the curriculum, where two pedagogies often intersect: that of writing instruction and that of instruction in the particular discipline. However, a third pedagogy, teaching with technology, can be the way to bridge perceived differences between disciplines, especially at the developmental stages of a writing-across-the-curriculum program.

Writing-across-the-curriculum initiatives can benefit in unforeseen and even unexpected ways from the infusion of technology, in particular from the new interest in commercial course management systems such as Blackboard and WebCT (the parent companies of which have recently merged) or eCollege and those that have been home-grown at various institutions. At institutions where WAC programs have previously failed to attract the support needed from both faculty and administrators, connecting WAC to technology can have a number of benefits: funding opportunities (since technology is usually where the money can be found these days), access to new tools and materials, and access to faculty interested in enhancing their teaching using these resources. When an academic institution as a whole has made a strong commitment to technologically enhanced teaching and learning, its members are often open to other changes as well. WAC can be one of those changes. This was the case at Seton Hall University, where several existing structures—a mobile computing program that provided all faculty and students with laptop computers, an in-house grant for curriculum development that had traditionally been used to fund technology projects, and the commitment to a course management system to enhance teaching and learning, in this case Blackboard—were used to create a project for the development of writing-intensive courses that has had far-reaching effects.

Technology has been widely used in faculty development over the years; obviously, when technology is used in educational settings, it is used in curricular and pedagogical training (i.e., teacher-training degree programs), often with the added benefit that faculty members end up using the technology in their own teaching. However, the most consistent and rigorous efforts to use technology to train faculty have been when colleges and universities teach faculty how to use computers and other software, mostly to justify the research and development funding that these glitzy, gotta-have-it applications require, and, perhaps, to institutionalize the pedagogically questionable electronic "'delivery of information' model" of online teaching (McLeod, "Followup: WAC and Technology," par. 2, 2000). More recently, with the advent of course management systems, faculty have been trained *ad nauseum* in the use of these tools, even under the guise of improving their teaching. Indeed, according to a study by the Association of American Colleges and Universities (2000), "successful teaching … is expected of new faculty, as is the capacity to … use engaging approaches to teaching and learning (e.g., technological, collaborative, and service learning)" (Gaff et al, p. 66). Fortunately, in Seton Hall's case, using technology in writing across the curriculum has been confirmed to be a good way to both fund WAC and enhance its implementation. Yet, there has been little research or writing on the specific use of course management systems to train faculty in WAC, which is what we have done in our program and, we suspect, many others are doing in their programs. As Christine Hult points out, "We, like many other universities across the country, are using technology in support of faculty outreach and training efforts, but our efforts are indirect, through other technology initiatives…" ("Opening Statement," par. 1, 2000). This is an area that deserves further attention; indeed, Dan Melzer (2000) insists, "[a]s more and more institutions push for computer-assisted and distance learning courses, WAC practitioners need to be active participants in both helping to choose technology and helping train teachers to use the technology effectively" ("Conclusions," par. 1). Fortunately, this type of synergy between the technology folks and the WAC folks (those of us writing this article) exists at Seton Hall, and it has helped us both infuse WAC across the university and leverage technological resources, specifically, course management systems, but other applications as

well. In our model, Melzer's words ring particularly true: "It's important for WAC practitioners to discuss websites, electronic discussion boards, and listservs in WAC workshops; to become actively involved in the teacher training for electronic pedagogy, and to research and report on WAC and technology" ("Conclusions," par. 1).

At Seton Hall, there had been several, previously unsuccessful attempts to institutionalize writing across the curriculum. The first efforts were made 20-plus years ago, at the same time the university's developmental English program was being created. The renewed emphasis on student writing made it clear to some faculty that additional writing instruction was needed if students were to graduate with adequate communication skills. The second attempt came in the mid-1990s, under the leadership of a university provost who was committed to student writing. In both cases, however, limited funding doomed these WAC projects, and they were discontinued after a year or two. The third and most recent initiative was developed in spring 2000, when the English Department decided to take advantage of a successful and well-funded Curriculum Development Initiative (CDI) grant program to support a plan to develop writing-intensive courses at the university using technology. The aim of the Writing-Intensive Courses Project was threefold: to encourage and help instructors increase the amount of writing students do in their courses and thereby improve the quality of that writing; to provide instructors with materials, training, and a support system; and to initiate a change in the institutional culture.

In addition to knowing the WAC history, it is important to understand this initiative within the broader institutional technology context. In 1997, Seton Hall made a university-wide commitment to information technology, launching a mobile computing initiative and working to create a ubiquitous computing environment on campus. A laptop program was launched, and today every full-time undergraduate student and instructor (full-time and adjunct) on campus has a university-issued laptop computer with access to training and technology support. After testing several course management systems, the university has adopted Blackboard and has also enabled wireless access on 95% of the campus, including offices and residence hall rooms. While this level of technology development is not essential to creating a technology-enhanced WAC program, the environment created by the initiatives at Seton Hall was one in which educational change based on the use of technology had become a way of life. It was this paradigm shift in the way everyone on campus was thinking about teaching and learning that made another attempt at a WAC program so attractive.

Connections between the English Department and the technology division were already strong—the English department had been a key player in the mobile computing initiative—and the Teaching, Learning, and Technology Center (TLTC), then under the direction of Donald Carter (now at Northern Arizona University) and now under the direction of Paul Fisher, was and remains a strong proponent of academic innovation. There were several other details that factored into the decision to attempt WAC once more at this particular time: the university had decided to adopt a course management system that we realized could also be used for faculty development purposes; there was talk of revising the core curriculum, and writing-intensive courses might find their way into that plan if enough faculty had already been introduced to the concept; and, finally, changes to the two required courses for all first-year students had made it strikingly obvious that writing needed to happen more broadly across the curriculum if students were to graduate with high-level written communication skills.

The Writing-Intensive Courses Project was conceived as a three-year plan for training interested faculty members and providing incentives to develop writing-intensive courses. There were two phases to faculty involvement: in the first year they served as "participants," developing their writing-intensive courses and giving a presentation each semester to the group at large demonstrating what they have done and talking about successes, problems, and future plans. In the

second year they served as "mentors" to the next round of participants, sharing their experiences while continuing to develop their own courses and attending workshops. In addition, several tactical decisions made from the outset gave a distinctive tenor to the project. For example, participation is by invitation only. This meant that, rather than an open call for applicants, recommendations were gathered from colleagues, department chairs, deans, and former participants, and then we emailed faculty directly with an invitation and a detailed explanation of the project. Participants were also chosen on the basis of their involvement in the overall life of the university ("good citizens")— especially senior faculty when possible—in order to develop a core group of "converts" whose opinions would be highly regarded and who might help garner support for the institutionalization of WAC at Seton Hall.

The Curriculum Development Initiative—an in-house grant project at Seton Hall University— provided a perfect opportunity for funding. The CDI program was designed to support faculty efforts at curricular change using technology by awarding multi-year grants in amounts up to $150,000. Seton Hall's TLTC is responsible for awarding and supervising the grants, with an eye toward innovative proposals that are both technically feasible and viable, and that have the best chance of leading to broad-based curricular change. The Writing-Intensive Courses Project, however, reversed the usual trajectory of grant proposals: rather than foregrounding the technology, the object was to use the technology to advance pedagogical aims. The project was designed to help instructors reformulate their undergraduate and graduate courses in order to incorporate writing in ways that are pedagogically sound and improve student learning. The participant/mentor structure guaranteed that instructors stay with the project for a second year, thus reinforcing the skills they learned. The project was interdisciplinary, with participants and mentors from 16 different departments/programs—Math and Computer Science, History, Psychology, Philosophy, Art and Music, Communication, Criminal Justice, Sociology and Anthropology, Biology, Asian Studies, Freshman Studies, Elementary Education, Nursing, Diplomacy, Business, English, Graduate Medical Education—representing faculty from all five undergraduate/graduate colleges and one graduate college (College of Arts & Sciences, College of Nursing, W. Paul Stillman School of Business, College of Education and Human Services, John C. Whitehead School of Diplomacy and International Relations, and School Graduate Medical Education).

While this project did not necessarily call for innovative uses of technology, it did require instructors to use the existing technology in ways suited to their particular needs. Instructors developed a new set of technology skills and now make more use of information technology than they formerly did, and so do their students. Instructors also learned how to use technology to incorporate writing into their courses in ways that are both effective and pedagogically sound. For example, a program such as Blackboard allows the sharing of writing and the ease of composition instruction essential to the success of any writing-based initiative today. To this end, instructors in the project were and are expected to regularly use the course management system to deliver course materials, provide feedback, and create a community of writers. Using the English Department's Freshman Writing program and national best practices as models, participating faculty were trained in the use of Blackboard for class-related writing and other assignments, including essays, tests/quizzes, journals, in-class writing, and reading responses. In addition, when they posted to a Discussion Board forum in the faculty development course, for example, instructors thus contributed to a lasting database that was shared with one another, with instructors outside the project, and with the project directors. The Blackboard courses for the project now house models, templates, and learning modules for critical thinking, assignments (journals, in-class writing, reading responses), peer review, evaluation criteria, grading notations, alternatives to letter grades, sample syllabi, assignment sequences, model essay tests, websites, and other references. These have become a resource for any instructor who

wants to increase the writing done in a particular course, regardless of the discipline. The use of information technology also allowed all those involved, including an off-campus consultant (Kerry Walk, Director of Princeton University's Writing Program), to communicate with participants, share materials, and be a resource for writing-intensive instruction. The implementation of this technology-enhanced faculty development model for WAC is described next.

Using Blackboard to Train Faculty in WAC: Some Specifics

As described above, the Blackboard learning suite for Seton Hall's Writing-Intensive Courses Project formed the basis of each year of the grant – there was a different course created annually for each new group. To maintain continuity and communication among the grant's growing population of current and former participants and mentors, all former faculty members involved were added into the new year's course; this way they could at any time check into the course to see if there are new resources to consider. In the course repository, the co-directors include any materials that are created for or contributed to the project. This includes the original grant proposal, articles and newsletters that the participants and mentors are asked to read (these are linked to our library's electronic reserve system), handouts prepared by the consultant and the co-directors as well as the participants and mentors themselves, notes on the summer retreats and semester workshops that are generated by a graduate assistant, sample assignments, grading rubrics, models of student writing and instructor feedback, journal entries and other writings developed during the workshops, and writing-intensive syllabi. In the External Links section, there are a number of websites posted that are especially helpful to instructors teaching writing-intensive courses, including links to the University Writing Center and online Writing Lab, the University Library, the e-reserve materials, and any other links that the participating faculty recommend. Other materials are included in the various areas of the Blackboard course so that current and former participants and mentors can keep up to date on what the current program participants are generating as well as look for new strategies that they might incorporate into their teaching.

The course management system was used extensively in the summer retreats and semester workshops, to archive and discuss agendas, handouts, writing prompts, schedules, deadlines, journal entries on workshop topics, session evaluations, and so on. All documents, journaling, and assignment posting took place in the Blackboard course. In addition, both within and outside of the workshops, participants and mentors could respond to others' postings, whether musings on the uses of informal writing in the classroom, semester-long syllabi, or formal writing assignment sequences that required peer feedback. Much of this give and take took place in the Discussion Board; because of the collaborative nature of the project (characteristic of the open environment we try to maintain in all writing-intensive courses), very little was considered confidential, so the use of the Digital Dropbox, small group pages, or individual email was not necessary. However, we could use the email function within the Blackboard course to remind the group about upcoming workshops, to coordinate schedules, and to publicize other events of interest.

Still, the Discussion Board formed the basis of our work. In each year's course, there were 30 forums, on average, created in the Discussion Board. The forums ranged in breadth from those in which participants and mentors posted sample writing assignments to those in which participants posted PowerPoint files or other documents related to the presentations they gave to the entire group at the end of each semester showcasing their use of one WAC technique, such as in-class writing, peer review, or assignment sequences.

Since the project was funded by the Teaching, Learning, and Technology Center, another advantage of the project was the ability to assist faculty in the use of software applications, including the

Blackboard course management system, so they could gain the confidence they needed to embrace the technology and thus enhance teaching in general – and the teaching of writing, in particular -- in all their classes. We believe that the ability to use the technology effectively also made it easier to incorporate writing into other courses, thus increasing the scope of the project. This is, in fact, what our evaluations have revealed. To that end, we also conducted special training sessions and one-on-one meetings with participating faculty and mentors on the expanded uses of the course management system, plagiarism databases and websites, secure-classroom software, and other technology applications available at the University.

Interestingly, and perhaps not surprisingly, even with the wide-ranging advice we gave on incorporating writing into faculty members' teaching and using Blackboard to facilitate response to student writing, not every participant (or even mentor) ended up teaching writing or using the course management system on a regular basis. One reason for this is that some faculty members did not ultimately see the applicability of our writing-intensive techniques to their teaching. Furthermore, technologically speaking, some faculty participants and mentors used their own websites for their teaching, and not the Blackboard platform – or, they did not use technology in any significant way at all. However, other reasons include the perceived lack of time to incorporate the course management system into their teaching – this project did not provide release time; instead, it provided stipends to the participants ($2,000 annually) and mentors ($500 annually). Furthermore, we encouraged the incorporation of writing into the teaching of all our participants' and mentors' courses, not just the one that was identified in the grant, and that kind of implied expectation on our part represented a large amount of work on our participants' parts, which, we believe, many undertook over time, but not right away. Another reason that faculty members did not always incorporate Blackboard was a perceived lack of expertise and confidence in the technology, which we tried to address by answering the individual questions that came up as people attempted to implement assignments and feedback on the course management system as well as conducting training sessions. A final reason that faculty members did not always incorporate the technology, of course, is that they did not immediately see the value of using a course management system or a website instead of the traditional methods – paper and pen, simple word processing, and verbal discussion. Even so, the majority of participants and mentors did become more comfortable with the technology and used it to infuse more writing in their teaching. Indeed, that state of affairs proves our point: technology can be a way to encourage instructors to incorporate writing while also helping them see the ways that technology can improve teaching and learning in more general ways.

Ultimately, we found that most of the involved faculty members have used the techniques and strategies that they learned in all of their teaching, not just their project-identified writing-intensive courses. A number of faculty members, even those who had been teaching with traditional methods or adding just a bit of writing to their courses in the past, have taken the strategies they've learned and incorporated them in their teaching to an even larger extent than we – or even they – expected. They have, in fact, transformed their teaching. One faculty member in Art History has taken the assignment sequence technique to a very detailed level, putting every skill set and writing-process step of the research paper into the electronic course and taking her students through the assignment that way. Another faculty member in the Psychology Department, Dr. Susan Nolan, has taken a similar route with her students' major research paper. In the Mathematics and Computer Science Department, Dr. John T. Saccoman uses the assignment sequence as well as an intensive focus on student-generated topics to improve his students' writing. And, in the College of Nursing, Dr. Joyce Wright has developed a detailed grading rubric to improve her students' writing as well as her own grading. Their experiences, enhanced by the use of WAC techniques and technology tools, are described in detail below.

A Psychology Case Study in WAC – Research Papers and Journals (Dr. Susan Nolan)

Without the acquisition of writing skills, a liberal arts education is incomplete. Despite this, many professors in non-English fields avoid writing instruction with some variation on these words: "I don't know how," "It's not possible in this course," or even "It's not my job."

I always have been a proponent of incorporating extensive writing into my psychology courses; however, without guidance on how to teach my students to write, the results of my efforts were at best limited. I have marked my students' papers to the point that, I am certain, my students were too overwhelmed to learn from my comments. I also have assigned my students long papers with few steppingstones to enable them to carve their projects into manageable chunks. And I certainly have not taken advantage of the vast potential of available technologies to facilitate the writing instruction process. Through the writing-intensive courses project conducted by faculty members from the English Department and under the auspices of the Teaching, Learning, and Technology Center at Seton Hall University, however, I have been able to develop my writing instruction skills, in great part through the use of technology.

Beginning in the summer of 2001, I participated in the Writing-Intensive Courses Project conducted by English Department faculty members and aimed at developing the writing instruction of faculty across the disciplines. Because I always have valued writing instruction in my psychology courses (e.g., I assign multiple writing assignments, even in my 120-student Introduction to Psychology sections), I was eager to participate in the yearlong series of workshops. I anticipated that I would fine-tune my writing instruction, perhaps tweaking some of my assignments - ultimately, though, the fine-tuning became an overhaul. I now routinely apply methods I had never heard of prior to the workshops, and I apply many of these methods using the technological tactics modeled by the workshop leaders.

The workshops engaged participants with activities, many based in a course developed for the project in Blackboard, a courseware product available to all Seton Hall community members. Four workshop pedagogical techniques – modeling, active participation, group discussions, and feedback – helped me apply lessons learned from the Writing-Intensive Courses Project to my own courses.

- **Modeling:** From our first meeting, the workshops' leaders, the English Department's Drs. Mary Balkun and Kelly Shea, modeled technologically-based writing instruction behaviors, such as online discussions of the writing assignments we currently use in our courses, which they hoped we would emulate.
- **Active Participation:** The workshops utilized very little lecture, instead encouraging, even requiring, active involvement by both participants and mentors. For example, Drs. Balkun and Shea elicited examples of participants' grading rubrics that we could examine with an eye towards improvement. The rubrics were posted on a threaded electronic Discussion Board so that we could provide feedback to our peers and learn from other examples.
- **Group Discussions:** The workshops were often book-ended by group discussions – first online, then segueing to lively "real life" discussions that built upon the ideas we had just posted to the group's Discussion Board.
- **Feedback:** The nonjudgmental atmosphere that encouraged us to share our existing pedagogical strategies also provided the means to receive ongoing, constructive feedback from participant peers, mentors, and workshop leaders, both in person and via the online portal.

In that first year, I incorporated ideas from the workshops into two psychology courses, Research Methods and the capstone Seminar in Psychology. In both courses, I historically had assigned a major research paper in APA Style. Although in past years the students had been required to submit periodic drafts of standard APA paper sections (i.e., Introduction, Methods, Results, Discussion), there had been few other writing activities related to the major paper. As part of the writing-intensive courses project, and in large part due to the activities modeled in the workshops, I created multi-stage writing assignments in which prewriting exercises and informal writing assignments, often posted electronically to elicit peer and professor feedback, preceded the drafts of each of the sections of the major paper.

Prewriting led to better drafts. For example, before writing the Methods section, students were assigned to one of two groups and physically separated. Each group then participated in a different short experiment (one on memory, one on stereotyping). In pairs, the students wrote instructions in the electronic course, describing the materials and procedures of the experiment in which they had participated to those who had participated in the other experiment. For example, two students who had participated in the stereotyping experiment read one of the online descriptions written by a pair of students who had participated in the memory experiment. The first two students then attempted to conduct the experiment with the students who had written the instructions acting as participants, often with hilarious results. For the memory experiment, for example, some students forgot to write the timing of the presentation of words to memorize, leading the new experimenters to read the lists far too quickly or slowly (in one case, one word per minute, as opposed to one per second!). Students quickly learned the importance of writing methods sections in enough detail for an experiment to be replicated, the primary goal of that section of the paper. Moreover, the online archive of student-written instructions allowed students access to both good and bad examples generated by their classmates.

My writing instruction techniques expanded in three other significant ways. I was able to examine grading rubrics and sample feedback that were posted on online discussion threads, as well as others' comments on the rubrics and feedback. From these discussions, I learned to refrain from overwhelming my students with comments on their papers, focusing on one or two major issues at a time. Through online discussions of peer grading, I initiated student revisions of one another's drafts. All peer revisions were conducted electronically so that an archive of peer feedback was developed, and all students could learn from others' papers. And, by watching the ways in which threaded discussions enhanced the live discussions in our workshops, I expanded my own use of online discussions in my classes, often requiring my students to post comments in the days leading up to a class in which we planned a live debate or discussion.

In the second year of the project, I returned to mentor two colleagues, professors from the School of Nursing and the Department of Mathematics and Computer Science (interestingly, not the other Nursing and Math professors writing in this article), respectively, who were participating in the project for the first time. In relationships that were more collegial than mentoring, we crafted assignments for our respective classes and shared our successes and setbacks. For example, my colleague from the School of Nursing and I collaboratively developed a journaling project, for use in both of our disciplines, in which students invent aliens to whom they write all semester in online discussion forums.

I now use the alien journals in Statistics for Psychology, the course in which I have assigned the least writing in the past. After having students create (write, draw, cut and paste from websites, or build from found materials; see Figure 1) and name their aliens, I have them post their artwork to the online course. I then have students write frequent entries describing statistical concepts "in plain English," and post their entries to the course. Students are then asked to respond to another person's

posting in the voice of her or his alien. Typically, students at first will attempt to convey statistical concepts using only formulas, a method that does not require them to understand the logic of the formulas. Through peer feedback to their alien journals, the students quickly learn that "plain English" is the most effective way to explain the logic behind the formulas. Some of the best explanations even use a little slang and a compelling example to help the aliens understand (see Figure 2 for example). Requiring that students put their understanding of statistics into their own words has led to a deeper understanding of statistical concepts, and has helped students to verbalize their questions. Moreover, many students experience an "aha" moment when they read another student's plain English description online. My mentee has implemented a similar strategy in a methods course that she teaches in the nursing department, and we both have had much success. Overall, returning to the writing-intensive courses project as a mentor enabled me to continue my development with respect to the teaching of writing, expand my use of technology in this pursuit, and assist in others' development in ways that were mutually beneficial.

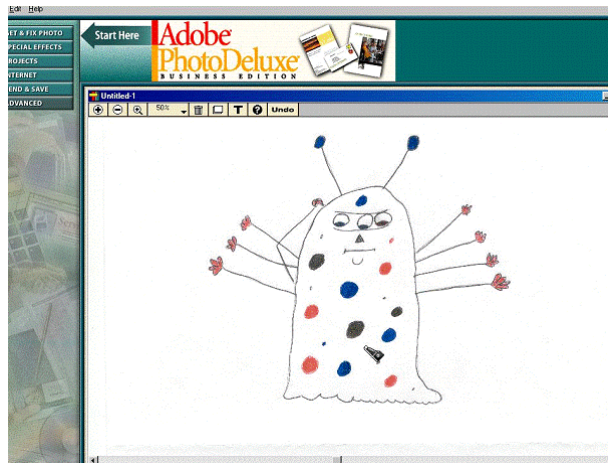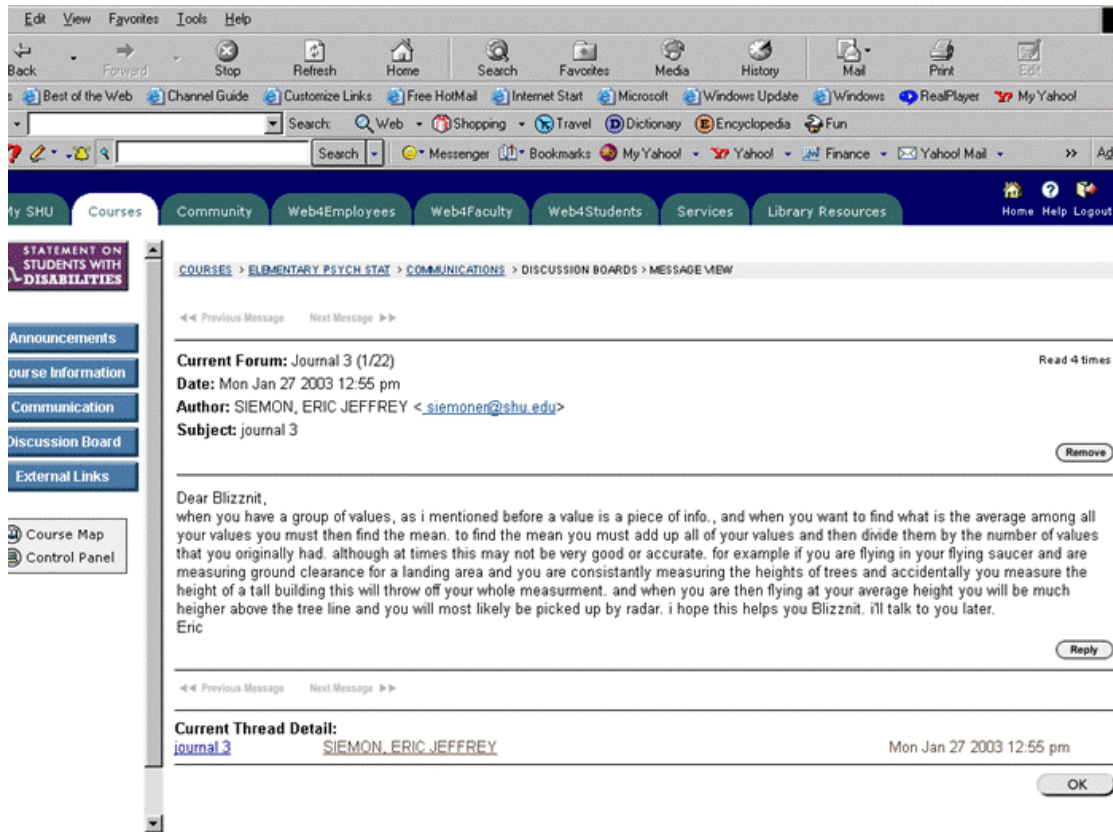*Figure 1: Example of a statistics student's alien.*

Figure 2: Student's letter to his alien, explaining why the mean is not always the best measure of the center of a group of numbers.

Although the evidence is admittedly anecdotal, the changes that I have made through the project seem to have led to increased student learning. First, the online discussions clearly improve in-class discussions. Not only have students been forced to read the relevant materials prior to class, but they have been asked to think about what they have read and to compose a written response to at least part of the reading. They are far more prepared than if they had merely been asked to read in preparation, and the usually ever-present lulls in a planned discussion are now conspicuously absent. Second, prewriting assignments improve student papers, even at the stage of the first draft, and give students an online archive to consult throughout the writing process. For example, the exercise prior to the writing of the Methods section, described earlier, makes students acutely aware of the importance of a detailed write-up, and the drafts demonstrate this awareness. Similarly, peer review improves papers, both through the feedback that students give to one another, as well as through the learning that occurs by reading peers' papers and noticing both good and bad aspects of their papers. In addition, the responses to essay questions on statistics exams have been noticeably more sophisticated since I instituted the alien journals.

Perhaps most important, students have not complained about the additional assignments. If anything, they seem to like them. At the end of my spring 2004 statistics class, I asked in evaluations "What aspects of this course most helped you learn?" Thirteen of twenty-seven students, without prompting, cited the alien journals, by far the most common response. (The runners-up, with nine, six, six, and five mentions, respectively, were homework assignments, in-class examples, discussions of statistics in the media, and frequent quizzes.) A typical response: "Alien discussion boards allowed you to see if you could really understand the material by explaining it yourself."

Evidence suggests that my students have gained from my involvement in this program; yet, I have gained as well. I am more comfortable with the implementation of a range of writing assignments. I now have at my disposal an arsenal of writing-related pedagogical techniques, many of which I had not heard of prior to this project. I have expanded my comfort level and awareness of existing technology that can help with writing instruction. And I have access to resources – my former mentor; my peers, including my mentee in Nursing; the directors of the program, Drs. Balkun and Shea; and the websites and books with which the directors provided me throughout my two years in the program. And it is clearly a gain for me that my students now write better papers!

A Mathematics Case Study in WAC – Assignment Sequences (Dr. John T. Saccoman)

When teaching a liberal arts mathematics course, there are two assumptions under which I work: on the whole, the students' math abilities are somewhat below average (although not as low as many people think), and the students' verbal abilities are somewhat above (and, in some cases, well above) average. Since the task of a good teacher is to make use of the strengths of his students, I have long attempted to find ways to make use of their verbal strengths to teach them about mathematics. When I was invited to participate in SHU's Writing Across the Curriculum (WAC) project, I enthusiastically agreed, because I envisioned that I would learn more about how to exploit the liberal arts students' verbal abilities to facilitate better learning. As my colleague from the psychology department has described above, it has long been my contention that one of the best ways to learn about something is to have to explain it to someone else, and this plays into the liberal arts students' inherent abilities from the start.

For me, the most provocative topic that I learned about in the monthly WAC seminars was the so-called "assignment sequence." In the past, when teaching a liberal arts mathematics course, I would assign several (3-4) short writing assignments, covering different topics from the syllabus. What the assignment sequence does is to layer the assignment in such a way that the student builds his or her knowledge of the topic in stages, and attains a depth of knowledge not possible under the "old" way I assigned the papers.

Another key component is that I encourage the students to select a topic that interest them. Mathematics can be found in many aspects of life and work, so helping students find that which interests them is a significant part of my job at this phase of the sequence. I feel this is especially important when dealing with students whose view of mathematics is less than a positive one. If they can write about something that interests them, I have found that their attitude toward the assignment improves, which in turn improves the quality of their writing, and which ultimately leads to greater depth of learning.

In the fall of 2003, I taught MATH1102, Mathematical Perspectives, and this particular course was populated mainly by liberal arts majors (such as Communication, English and History) and elementary and special education majors. Besides assigning the students to periodically submit solutions to some mathematics problems from our textbook, I also assigned the following writing assignment approximately one third of the way into the course:

> Write a one page paper (single spaced, 10 pt font) about some aspect of mathematics that interests you or about which you would like to learn more. The paper topic should be something that interests you enough for you to write a term paper of 8-10 pages about it.

I had the students submit their assignments to me in 3 formats: electronically, in hard copy, and orally (to the class). This gave me an idea of what their thoughts were about the topic, and I returned the hard copy to them with comments aimed at directing the next phase of the project, the longer form term paper. The electronic copy is submitted via the Digital Dropbox of the Blackboard Learning System, which has a site for the course. Their papers are then uploaded to a plagiarism-checking website, which for Seton Hall University is turnitin.com. The students are informed of this in the course syllabus. The oral component also helped me to see how conversant they were in their chosen subject. In this particular class, the students selected very well; they were on the whole conversant in their topic, and with minor tweaking suggestions, delivered in the commented hard copy, I felt that they could easily write a paper of the desired length and depth.

In other classes, I have further used the Blackboard site's Discussion Board when students are selecting a topic for a writing assignment from a given list. When I want each student to select a unique topic, the students can post their choice, and this choice is visible to all the students in the class, and time-stamped in case two students try to select the same topic. At Seton Hall University, where class sizes are relatively small, multiple students selecting the same topic has not been an issue, but it certainly could be, particularly at an institution with larger class sizes.

Suzanne, an education major, wrote about something she enjoyed in high school and which also was a topic in our class: Pascal's Triangle. In her submission for the one-page assignment, she wrote a lengthy paper. She went into great detail, and I did not penalize her for her enthusiasm. An excerpt:

> Pascal's most famous and widely used mathematical principle/concept is the Pascal triangle. To construct the triangle, start with a one (1) at the tip. To obtain all the numbers in the following levels, add the numbers above them diagonally to the right and left. For example, to obtain the next row, one would add a 1 and a 0, because all the numbers outside the triangle are zeros.
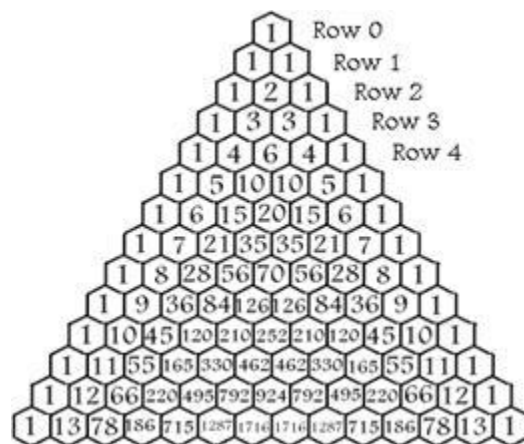
> There are many unique features about the triangle. Any number in the triangle can be found using this formula nCr. The formula looks like this: n! /r! (n-r)! where n is the number of the row and r is the element in that row and ! means factorial (Pascal's Triangle 1). Also, when one examines the sum of each row, there is a pattern found. The sum of each row equals 2 to the nth power where n is the number of the row (Pascal's Triangle 2). For example 2^1 = 1+1 = 2, since the first row of the triangle contains two number ones.

Suzanne and I then met to discuss the possibility of expanding this paper into her term project.

Here was the assignment, as posted in the "Assignments" section of the Blackboard site for the course:

Mathematical Perspectives Term Paper assignment due by Mon 12/8 (graded out of 200 pts) --10% of grade

1. Given the topic in which you have indicated interest, write a 6-8 page (TEXT) paper (10 pt font, DOUBLE SPACED).
2. You must use at least 4 different reputable sources (see me if there is any question) and clearly attribute.
3. NO FIRST OR SECOND PERSON.
4. Submit the paper in two formats: the digital drop box in Blackboard, and hard copy. Hard copy will be returned.
5. The electronic copy may be tested on plagiarism software. DO NOT PLAGIARIZE – IT WILL RESULT IN A FAILING GRADE ON THE ASSIGNMENT AND FOR THE COURSE.
6. You may be asked to share your findings with the class.
7. Late submissions will not be accepted.
8. If you have any questions, please ask.

Note the actual assignment: 6-8 pages. My strategy was that, if a student is prepared for an 8-10 page paper but is then asked to write a 6-8 page paper, I would receive less filler and shorter quotes. That strategy worked. Once again, I request submission in both hard copy and electronic format.

Here is an excerpt from Suzanne's term paper:

> It is a modern misconception that it was Pascal himself who in fact invented the triangle. However, the triangle was in existence before Pascal's time and Pascal just tinkered with it a bit to find further applications for it and different patterns within it. The earliest usage of the triangle has been found in ancient China as far back as the year 1303. This is a little over 300 years before Pascal was even born! The early triangle is found within the book Ssu Yuan Yii Chien written by Chinese mathematician Chu Shih-Chien. The diagram found in this Chinese book is titled "The Old Method Chart of the Seven Multiplying Squares. This title implies that perhaps the Chinese did not use the triangle in exactly the same way as Pascal did nor the way that we do today. However, it does provide evidence to show that it was in existence way before Pascal ever began his work on it. The triangle also appears again in the work of Indian mathematician, al-Kashi, in the year 1436.

I have found that one of the important aspects of the assignment sequence is flexibility. One student, James, wrote his short assignment about Georg Cantor, a 19th century Russian-born mathematician. James wrote a serviceable account of Cantor's life and mathematical contribution, excerpted here:

> However, the most prominent thing that Cantor came up with is his set theory. Cantor used a system of counting one by one to establish the difference between infinite and finite sets. He states that infinite sets don't follow the rule that normal sets follow in which the whole cardinal number of the set should be larger than any of the objects inside of it (Miller 50).

However, James was in the process of changing his major to Communication, and in the course of the semester, he had learned about and become fascinated with the Nielsen ratings. So, he and I decided that this would make a great topic for his term project in our class. He writes:

> Nielsen has two separate ways of measuring the ratings of television programming in the United States. These two separate ways are statistical sampling, which involves his retake of the Audiometer for television. Then there is also another form of research called the "sweeps" that is done that involves a sample audience and a specialized type of diary that was made up by Nielsen's company ("A Look at How Nielsen T.V. Ratings Work").

> Statistic Sampling is quite similar to what pollsters use for elections. Nielsen takes a sample audience, which would be X, and then he counts how many people from that sample audience watch a given program which would be Y. So for the percentage of people who watch a certain show, it would be Y-amount of people watching that certain program over X which his the entire audience. This is similar to probability (Brain).

Caitlyn is an Education major who also took the Mathematics Perspectives class. Her assignment sequence took her initially to Fibonacci and the Fibonacci sequence, a recurring pattern of numbers that appears quite often in nature and in statistical analysis. She writes:

> In his treatise, Fibonacci opens the discussion of this sequence with the question, "How many pairs of rabbits can be produced from a single pair in one year if it is assumed that every month each pair begets a new pair which from the second month becomes productive?" This is assuming that the rabbits never die, and continually reproduce at the end of each month. As one source explains, "This sequence, in which each number is the sum of the two preceding numbers, has proved extremely fruitful and appears in many different areas of mathematics and science."

This treatment of Fibonacci (for which I, once again, did not penalize the student for enthusiastic extra length) set up her term project perfectly well. For her term project, Caitlyn tackled the topic of "statistics." This is a key topic for any education major, particularly one interested in pursuing graduate studies. Taking a course in statistical methods is, of course, necessary, but I wonder how many students in statistics class could provide such cogent analysis:

> As useful as statistics are, however, they can be misleading, meaningless, or entirely wrong, depending all on the methods of collecting data. Triola cites an example from the 1936 presidential race, when a national magazine predicted that Alf Landon would defeat Franklin D. Roosevelt. However, Roosevelt won the election by a landslide. The reason behind the incorrect prediction was the fact that the magazine used an erroneous method of sampling (Triola 13). The sample they used was the voluntary response (or self-selected) sample, in which the respondents themselves choose whether or not to be included (Triola 12). Though common, this is probably the worst method of collecting data, according to Maurice Bryson (qtd. in Triola 13). Other examples of this include Internet polls, mail-in polls, and telephone call-in polls. Statistics are only considered valid if they are taken from a random sampling (Triola 3).

The assignment sequence, the parts of which are embedded within the course management educational delivery system, encourages deeper involvement on the part of the student in a

particular topic and thus facilitates a deeper learning. The ability to explain what one has learned to others in writing is an important outcome for any educational endeavor.

A Nursing Case Study in WAC – Rubrics (Dr. Joyce Wright)

As my colleagues from psychology and mathematics have explained from their own perspectives, incorporating writing assignments into Seton Hall University's nursing curriculum was an educational obstacle and a personal challenge for me. For the most part, the emphasis on writing in nursing is initiated from the requirement for concise legal documentation within the hospital setting. In other words, nurses have to make sure to get to the point without any fluff! Furthermore, much of the curriculum evaluation in nursing takes place in a multiple-choice format, mostly because it is the format that is used for the nursing licensure exam. Thus, writing assignments are not widely used.

All this notwithstanding, I became a participant in SHU's CDI-5 Writing-Intensive Courses Project in 2003-2004, and I chose an online, distance-learning course in which to implement my writing-intensive assignments. I do use writing assignments in the nursing curriculum, for a variety of reasons. First, as mentioned above, students need to know how to document descriptively for legal purposes; second, I want to encourage students to consider further publications in their professional nursing careers; third, some students excel with writing as compared with multiple-choice testing; and last, I feel that writing assignments will help to better prepare students for graduate studies.

The distance-learning course on which I focused for this project, Professional Nursing I, was a unique virtual challenge because of the lack of a traditional classroom setting. The course is designed to help registered nurses pursuing their baccalaureate degrees to do research on multiple professional nursing issues. The writing focus was designed to encourage and mentor the registered nurse students, with their wide-ranging clinical experiences, to write on topics of interest to them in the professional arena. My rationale was that if I could give the students clear direction for theory papers, their movement into professional writing in their field would not be as threatening and overwhelming. Fortunately, I require drafts with the online course, which helps with demystifying an assignment, and the practice – all in the online arena – also gives the students my feedback, with the aid of the rubric, prior to the final paper. One major reason I chose to work with the CDI project was that I also needed to work on concise criteria to support the grades that I was giving to writing assignments.

My experience as a two-year participant (the second year as a mentor to another nursing faculty member) in the Writing-Intensive Courses Project allowed me to collaborate with faculty from other colleges at Seton Hall. In our workshops, we spent a great deal of time talking about successful strategies and diversified writing assignments for students from varied disciplines. Supplementary materials from participating faculty were posted on the WAC workshop's Blackboard site, and I learned about a variety of grading rubrics. My primary difficulty with objectively grading theory papers had been how to make comments that would enhance the student's writing. Nursing theory papers have grading criteria, but instructors are lacking guidance as to what constitutes an A paper as compared with a C paper. I was able to extrapolate criteria from the posted rubrics on the CDI-5 course site and synthesize a relevant grading rubric that I hoped would give students explanatory criteria and guidance for their theory papers. I conducted a literature search within the cumulative nursing and allied health literature and found absolutely no published articles on the use of grading rubrics within the nursing or the allied health professions. My search then took me to the educational database, which was very useful for information on research and implementation of rubrics. Since then, I have presented my grading rubric at a national nursing educational conference and, needless to say, it was very well received and created discussion among other nursing educators across the

country. It was the general consensus at the conference that grading rubrics give further guidelines to enhance grading consistency, especially for the increased number of adjunct faculty who have stepped in to alleviate the nursing faculty shortage. In addition, the College of Nursing at SHU has recently incorporated the generic writing rubric into the college's first electronic-portfolio requirement for its students.

The grading rubric I developed for the theory papers enhanced my students' writing, because I provided them with explicit writing criteria beforehand. The rubric is part of the students' syllabi, which they have ahead of time, and it allows them to review writing expectations and gives them the opportunity to discuss these assignments openly in class. With the additional challenge of online teaching, I required an interactive chat for students once a week on curriculum topics, allowing the first 15 minutes of our chat time for questions regarding upcoming assignments. Through this chat, our class then discussed components of a persuasive introductory paragraph that was well organized. This opened up a discussion that enhanced communication on what was expected for this assignment.

For example, after that exchange, one student, "Brenda," wrote on the topic of "Do Not Resuscitate" (DNR) status orders. Using the rubric, Brenda was able to develop persuasive, organized, and informative ideas within the introductory paragraph that set the stage for the additional points presented elsewhere in the paper. She presented three facts on the public's interpretation on the meaning of the DNR status in today's health care environment. Her introductory paragraph led into the three main ideas that were further developed in the assignment:

> Most often, families equate a 'Do Not Resuscitate' (DNR) physician's order with a lack of nursing care, or [a decision] to not treat the patient –   this is not the case. It is nursing's responsibility to educate involved patients and families with vital information of how a DNR status will not affect comfort measures and patient care. The three areas of information include; the DNR order should be written when the patient is cognizant and can voice what his/her desires are for the end of life care, good communication is a must with all patients, families and healthcare workers, and lastly, how the DNR status will not affect comfort measures and nursing care. These are the three identified areas of a DNR order that patients and families are concerned most with.

This introductory paragraph, while not perfect, does show that Brenda understands what she has to do in her paper and has made an attempt to set that up in the beginning. Most student responses to the rubric have been favorable, because now there are concrete criteria with concise, explanatory information. Student comments have addressed the idea that the rubric enhanced self-direction with papers and that the self-evaluation of the paper through the entire process offered helpful insights for their writing. In the future, I would like to have students involved in the creation of their own rubrics; in other words, I would like to have the professor and student jointly agree upon the criteria and grading scale of a rubric for a class, thereby giving students even more of a reason to buy into the process.

The rubric has also enhanced the way I grade papers. I now have specific comments, instead of generalized ones, to give to students so that they, in turn, can improve their writing skills. My comments may focus on the originality of the topic presented. For example, considering Brenda's DNR persuasive paper, the rubric might ask whether key points are presented, developed, and well supported by nursing research throughout the paper; whether the ideas presented are original or just a repetition of what exists in the allied health literature; and whether the student stays on track with the topic or whether extraneous information is included that does not lend support to the

original topic. So, for instance, since I highlighted staying on track in the rubric, Brenda was able to stay focused on her thesis and main ideas in her conclusion:

> Nursing care does not change with a physician's DNR order. Nursing continues to administer dignified and comfort care to the patient. Interventions for care include; maintaining an airway, providing supplemental oxygen, pain control, positioning the patient for comfort, and psychological and spiritual support for the patient and family. When patient and family are educated regarding the comfort nursing care that will continue to be implemented for their loved one, this information allows them to make a decision in which the family feels more comfortable and at peace with this grueling decision.

As a faculty member, using rubrics has been a unique learning experience for me in helping students to improve their writing, and, hopefully, it his has been a unique learning experience for all of my students, who have used the rubric as a guide to enhance their writing quality. If I had not attended the CDI workshop, I can venture to say that I would have never taken up the challenge of synthesizing a rubric for nursing theory papers. The CDI workshop opened another avenue for me, as well, demonstrating the technology that is available to enhance the clarity of and mentoring within what is my own pedagogically challenging area, dealing with online student writing assignments. To summarize the advantages of the WAC training for me as a teacher, I would have to say the collaboration, networking with other faculty on what strategies worked and what didn't work for them with teaching writing, was extremely beneficial and eye-opening. In addition, the exposure to what is technologically available to enhance assignments and, in turn, the writing of our students was invaluable.

Table 1. Grading Rubric

Grading Rubric	Grade A/ 3 points	Grade B/ 2 points	Grade C/ 1 points	Grade D/F/ 0 points
Introductory Paragraph/ Conclusion	Reflects a strong argument, superior organizational pattern, and specific focus.	Moderate argument, good organization, and adequate focus.	Weak argument, organization fair, vague focus.	Weak argument, no organization, poor focus.
Original Ideas	Strong support with outstanding presentation.	Good support, good presentation.	Main ideas not supported, fair presentation.	No original ideas.
Well organized	Each paragraph is well organized and transitions are smooth.	Some good organization, transitions are acceptable with subject matter.	Organization weak, very poor transitions with subject matter.	Ideas mixed; no organization to paper. Flight of ideas, difficult to follow.
Each paragraph unified.	Each topic is supported and is clear within each paragraph.	Some extraneous materials in paragraphs that distract the reader.	Very poor flow of sentences within paragraphs.	No common thread within the paragraphs.

Writing Style	Clear, succinct.	Good, Concise.	Weak, unclear.	Very vague, choppy.
External Sources	Used effectively to support paper, worked in smoothly.	Used a majority of the time appropriately and smoothly.	Inconsistent usage.	Plagiarism.
Mechanics, APA format.	Excellent spelling, grammar, punctuation. Correct usage of APA format.	Sporadic mistakes with spelling, grammar & punctuation. Good usage of APA.	Consistent mistakes. Frequent mistakes with proper APA.	Too many to count. Poor knowledge of APA.

Conclusion

As professors across the disciplines come to expect writing – good writing – from their students, students will come to realize that writing is not something that they do merely in English classes. As is evident from the case studies described above, many of the project participants report that they now refer to concepts to which students were exposed in first-year English classes; happily, students no longer show much surprise at these references, an indication that they do not view the concepts as new and that they are not shocked by their inclusion in other disciplines. If faculty development projects continue to propagate a general culture of good writing instruction regardless of the academic discipline, our students will have no choice but to realize that good writing is expected across the university, and they will rise to meet our challenge. And that *is* our job.

At Seton Hall and many other institutions, another part of the faculty's "job" is to incorporate technology into their teaching and research. And they can do it in ways that are useful to them and their students. Certainly, as Susan McLeod points out, "...it is vital that those of us interested in pedagogy across the curriculum get involved in designing ways to use technology, so that we can ensure that technology is enabling learning in the disciplines rather than returning us to the 'delivery of information' model of education." (as qtd. in Melzer, "Conclusions," 2000, par. 1). Furthermore, Charles Moran (2000) contends, "we should stay engaged with technology. WAC/CAC has always been to some degree about faculty/staff development. It would be smart of us, for a range of reasons, to incorporate technology-training into our faculty/staff development programs" ("Closing Statement," par. 4). We are pleased to report that through our technology-enhanced faculty development WAC project, many faculty members are teaching writing and using technology to do so. In particular, through this WAC faculty development project, we are finding that faculty are using technology to teach writing quite creatively, which is a fortunate byproduct for the university and good news for our students, too.

The Writing-Intensive Courses Project at Seton Hall has attempted to be, as Susan McLeod (2000, 1992) once characterized successful WAC programs, "a comprehensive program that transforms the curriculum, encouraging writing to learn and learning to write in all disciplines" (p. 4). Through the technology-enhanced and cross-disciplinary methodologies described herein, the project has provided a route for institutional change that is both pedagogically sound and technologically informed. The faculty development structure of the project – summer training, regular workshops, participant/mentor partnerships, technological training, and collegial support – has influenced the generation of the new core curriculum at Seton Hall, which is current being developed with a strong writing component. Linking a faculty development initiative with a technology initiative has

increased the number of users on campus, fulfilling the university's mission to foster creative teaching and learning. Originally intended to run for three years, the project was funded for an additional year in order to coincide with the initiation of a new university-wide core curriculum. Our hope was that, having achieved a critical mass of interested and converted faculty after three years, we would see the institutionalization of WAC on campus, that intentional and effective student writing would be under way in a variety of courses and disciplines. That vision soon looks to be a reality.

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