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In this issue:

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Tips for Improving Writing in IS/IT Courses

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Writing Across the Curriculum

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Abstract

This paper reviews the importance of clear writing for Information Systems and Information Technology (IS/IT) professionals. The need for effective written communication is emphasized by professional organizations, university standards, and industry needs. Incorporating writing into content-heavy courses appears as a daunting task for the busy professor. This paper offers tips that will help when including writing activities in IS/IT courses. The tips focus on integrating writing and content as well as streamlining the logistics of incorporating writing in a course.

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1. BACKGROUND

The emergence of written language in western culture (furthered by the invention of the printing press) marks a dramatic divide in human intellectual activity. Our literature is filled with often-anthologized stories from the oral tradition (for example *Beowulf*, *The Iliad*, and *The Odyssey*). That the ability to write down (and subsequently disseminate) ideas coincides with the rise of science suggests a causal relationship. In short, the oral tradition tended to produce stories; written language provides a mechanism where we can preserve, share, debate, and refine ideas. Writing makes science possible.

The establishment of writing standards reaches back into most elementary school curricula. A position statement published by The National Council of Teachers of English entitled "Standards for the English Language

Arts," asserts that students should be taught how to "adjust their use of spoken, [and] written ... language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes," as well as how to "employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes" ("Standards for the English Language Arts" 2005).

In the 1970's, many universities implemented Writing Across the Curriculum programs "as a response to a perceived deficiency in student writing and thinking abilities" (Fulwiler & Young 1990). And the focus of these programs was the integration of writing and thinking. That is, the perception that attention to surface detail and the production of error-free prose would produce good writing was questioned.

The importance of writing in society can be seen in the popular press. Books arguing the importance of writing like Lynne Truss' Eats, Shoots, and Leaves have become national best sellers. Even USA Today points out that reference books on writing continue to maintain a strong presence among best selling books (August 25, 2005).

As academics, we understand the importance of writing. Passing on this sensitivity and respect for clear, concise language to our students is another matter. There are several convincing (and practical) reasons why our students should develop strong writing skills.

2. RATIONALE FOR WRITING IN THE CURRICULUM

Professional Accreditation Standards

All current and emerging curriculum models have a specific statement or objective about the importance of writing as a student outcome (CC2001, Gorgone 2002, SIGITE 2005). Professional accrediting agencies, like ABET, are requiring evidence of mastery of written communication by students. Educational professionals understand that writing is a skill that is important to the computing curricula (Walker 1998).

Employers' Demand for a Literate Workforce

The importance of communication skills has also been documented in the popular press (McKay 2005) as well as conference articles, and even the literature of career services and employment agencies (RHI 2003). The United States Department of Commerce's report on Education and Training for the Information Technology Workforce (2003, p.50) indicates that interpersonal and communications skills rank as the most important non-technical skill for an information technology professional at all levels within organizations. Clear and precise writing is more critical now than ever.

University General Education Requirements

The proliferation of **Writing Across the Curriculum (WAC)** programs nationwide is evidence of an attempt to remedy inadequate student writing—a persistent problem

noted by college administrators and English Department faculty for several decades.

Writing skills are generally stressed in traditional Freshman English classes, as well as writing-intensive classes for students in upper-level university courses. In fact, the establishment of minimum writing standards is common at many universities in the United States. Our university requires students to take two writing-intensive courses at the junior or senior level, with at least one of these courses in their major field taught by an instructor who has been certified through attendance at an interdisciplinary writing workshop. Additionally, regional accrediting agencies (such as The Southern Association of Colleges and Schools) mandate that the writing skills taught in these classes be verifiable.

Writing Fosters Critical Thinking

Writing intensive courses are taught by faculty who often consider the teaching of writing as someone else's job. However, in an effective writing-intensive course, the writing and the course content dovetail in such a way that writing becomes the primary vehicle of instruction. That is, students learn through writing. If viewed in this manner, writing becomes integral to the course—not an extra chore layered on top of an extant course. In fact, John Bean (1996) points out that the Writing Across the Curriculum movement has been "largely a reaction against traditional writing instruction that associates good writing primarily with grammatical accuracy and correctness." Bean summarizes William Perry's argument found in Forms of Intellectual and Ethical Development in the College Years which suggests that students who initially view themselves as passive recipients of knowledge in the classroom ideally develop into thinkers who learn to engage in intellectual debate. That is, they eventually reach a point where "writing means joining a conversation of persons who are, in important ways, *fundamentally disagreeing*" (Bean 1996). Bean further argues that "the writing process itself provides one of the best ways to help students learn the active, dialogic thinking skills valued in academic life."

3. TIPS AND TECHNIQUES

The following "tips sections" address two areas: 1) the integration of course material with writing skills and 2) the implementation of techniques to facilitate the writing instruction and assessment. These tips and techniques are drawn from teaching IS/IT writing courses and WAC workshops.

Tips to Integrate Writing into Course Content:

Writing can be integrated and emphasized in many technical courses without a great deal of effort. Writing activities do not detract from or compromise the course content but actually strengthen it.

Use varied writing types: Information technology professionals will encounter many types of writing challenges throughout their career. By offering varied writing activities in a class, the student will experience the breadth of writing that needs to be mastered. Writing types vary from simple informational one page memos to detailed project reports. Dr. Walker (1998) pointed out that writing opportunities exist across the entire computing curriculum. Writing activities can be a natural part of most IS/IT assignments.

One method is to develop a sequence of assignments that simulates a large project. The writing may start with a short definition memo and end with a detailed report. Within the structure of most courses, it is possible to find many varied types of writing that will allow students an opportunity to practice.

Vary the audience: The audience of each writing activity should be varied and reflect the two main audiences: technical peers and client lay persons. Requiring students to practice writing to different audiences will force them to consider not only the content of the writing, but also the tone, formality, and vocabulary (i.e., jargon and acronyms). Writing should be clear and complete for each audience so that each understands the ideas being presented.

Provide students with feedback: Give students an opportunity to improve their writing through useful feedback. A checkmark is ok for quick grading but a "good point" is more useful at improving writing.

Similarly, a negative comment might include a sample of a better way to communicate the idea in question. Providing examples will not only help the writer to improve this draft but will provide guidance for the next assignment. However, avoid the temptation to re-write the paper.

Consider using some color other than red when marking a paper. When a paper is covered with a large number of marks, they are not as overwhelming when in an alternate color. In any case, ensure that the feedback is clear and connected to the passage. You can use a simple notation system that directs the writer to extended comments in the margins or the back of the page. If using electronic grading, word processing features such as Microsoft Word's Track Changes feature allows feedback to be clearly connected to a specific passage. Additionally, this feature allows more room for constructive dialog and even examples.

Sample student writing and present it in class: Examples, gleaned from an assignment, provide a teaching opportunity that addresses problems that the students have had. The examples are chosen to illustrate problems with writing mechanics and/or content that occurred in the assignment. Be sure to alert students either by syllabus or class statement that their work may be chosen as an example. The simple technique includes:

- § While grading an assignment, choose examples of student writing that illustrate writing problems.
- § Maintain student anonymity by retyping and reformatting the example.
- § Create a handout or in-class presentation that includes a statement of the issue or rule, the example, and a possible solution.
- § Present the examples in class for discussion.
- § If time allows, a successful classroom activity is presenting the example and allowing the students to discuss and clarify the writing.

This technique allows students to view the work of their peers and reflect on not only the problem presented but their own writing for the same assignment. Many students

share the same context for writing and the same problems with expressing the ideas. If nothing else occurs, students learn that they are all experiencing the same problems.

Provide a realistic view of the need for clear communication: Using current examples of poor communication provides an opportunity to present the need for clear communication. A recent automotive help column contained the following statement, "I'm a short person with a 20-pound dog looking for a small SUV. The only requirement is that the rear door open side-to-side and not bottom to top" (Mateja 2005). This example provided an opportunity to discuss clear communication and its importance. It is possible to include in this discussion examples from the IS/IT literature that illustrates this need.

Discuss the process of writing & editing: Many students procrastinate and leave a writing assignment to the last minute because they view writing as a one time activity. Many authors emphasize that good writing is a process that takes thought and time (Strunk 2000, Pfeiffer 2003).

Motivating the student to begin the process of writing earlier rather than later will foster better thinking and writing. Before beginning an assignment, students need to overcome problems such as: inertia, course workload demands, writer's block, and personal time commitments. One motivating factor is to ensure that the writing activity is closely related to the current course material. This may stimulate classroom discussion, student thought, and the motivation to write.

Provide in-class peer review: Choose an assignment and schedule a peer review of a draft. A scheduled review session will force an earlier start on the writing and provide an extra edit review of their writing. Engaging the class in meaningful review can be problematic; but using a process provides a workable solution. This process should include:

- § Students bring two (2) copies of their draft for review.
- § Students review and mark two papers from other students.
- § Upon completion of the review, students complete a short evaluation form.

§ The evaluation forms are returned to the instructor and the drafts are returned to the authors.

§ Students turn in the final document with both peer reviewed drafts.

This process provides students with two commented drafts before they begin their final edit. The formalism of this process reinforces the importance of editing and revision to effective writing.

Emphasize writing throughout the course: Clear writing should extend to all aspects of the course. Walker (1998) points out that failing to mark writing errors wherever they occur de-emphasizes the importance of clear writing and effective communication. A simple statement that clear and correct writing is expected in the course syllabus will demonstrate that correct writing is expected and demanded. Routinely marking spelling, grammar, and other errors on exams, in code documentation, and even student emails, provides a consistent view that correct writing is important. The simple act of marking these errors shows students that these errors are noticed.

Unclear writing is unclear. The grader should grade what was written and not an impression of what might have been intended. . Many times students will say "You know what I mean, so what is the problem?" This provides an opportunity to remind them that computing professionals strive to be precise, correct, and complete in their communication.

Provide mini-lessons in class: Writing intensive courses do not mean that writing is taught instead of the normal course content; however, many techniques can be implemented to improve student writing without intruding upon course content. For example, a mini-lesson, five to ten minutes long at the beginning of class is a good way to point out a writing tip. For example, choosing a rule from the Strunk & White text provides a simple and clear writing concept. An even better way is to get students involved by having them present a writing concept to the rest of the class.

Mini lessons that provide students with good examples of clear writing may include topics like: writing mechanics, critical thinking, analysis, phrasing, use of headings, and

formatting. These techniques may reconnect the students with their prior learning and remind them that they once mastered this material. Now they need to continue practicing good, clear writing.

Do not forget to use the writing improvement resources provided by the institution. Many institutions provide writing centers, writing tutors, writing seminars, and websites that can provide assistance to the novice writer.

Tips for the Instructor to Make Teaching and Grading Easier/Manageable:

Clarify in writing all grading policies and procedures: Students should know exactly what constitutes an "A" paper, a "B" paper, etc. Not only does this serve as a guide for the instructor when grading papers, it sets a standard for students. It also destroys the myth that the evaluation of writing is totally subjective.

Create a grading rubric: Once standards are outlined, they can usually be condensed into the form of a grading sheet. If the primary criteria for any graded assignment are outlined in a formal grading statement, the rubric should reflect those standards and provide ease in grading. In short, these two items taken together (a statement of grading standards and a scoring guide) will provide the student with guidance while making the grading process less time consuming for the instructor. Additionally, it is a statement demonstrating the marriage of content and form. That is, it reflects course content and skills as they are expressed through written assignments.

Use an inexpensive text: We all have the occasional need for a grammar book. And many reliable texts can be found inexpensively in paperback form. On most university campuses, the sheer number of copies required by English Departments keeps the cost low. Require your students to own a copy. Encourage them to use it when writing.

Feedback comments can be tied to the grammar text reducing the commenting workload. Simply build into your grading rubric a reference to items in the grammar text. Let it explain the concept rather than wasting your time on marginal comments. After all, the instructor's primary focus is

teaching a body of material—and if accomplished through the use of writing as a process of discovery, the student is capable of discovering (and overcoming) grammatical error with a minimal amount of supervision.

Make writing integral to the course: Let them see that writing and thinking are linked, and that clear thinkers are invariably better writers. With this in mind, develop writing assignments that require analysis and introspection. These can be short, non-graded (or graded) assignments that clearly require thought and engagement with the course material. These are often referred to as "Write to Learn" activities. This might take some imaginative energy on the part of the instructor, but these types of assignments are probably some of the most productive writing students will do. For example have the students develop a user profile that could be used by a designer/programmer to develop a better user interface.

Let them see *you* as a writer: Bring in examples of your own writing (preferably in its various stages) so they can see how a piece of writing is "shaped." This will help combat the common myth that the Muse settles on a writer's shoulder and it just happens. Edit and polish your text along with the class. You will be surprised how eager your students will be to find error or offer suggestions for improvement in *your* writing. This also demonstrates how professionals write/revise/edit in their field.

Harness the power of revision: Our writing program stresses the importance of revision in the writing process—another aspect of these courses which might be viewed as a burden unworthy of class time and the instructor's energy. However, the revision phase of the writing process has a long and revered history. Although the empirical evidence of the effectiveness of revision with student writers is a matter of debate, there is overwhelming evidence that mature writers tend to revise more often than inexperienced writers. One study has shown that among three groups of writers (expert adults, advanced students, and inexperienced students) "the advanced students were the most frequent revisers" (Faigley & Witte 1981).

The type of revisions made is perhaps more revealing. Of the two primary types of revi-

sion changes (those that involve mechanics or surface detail errors, and those that actually change the meaning of the text), Faigley and Witte found that "the inexperienced writers' changes were overwhelmingly Surface Changes." They report that "12% of the inexperienced writers' revisions were Meaning Changes." However "about 24% of the advanced students' changes and 34% of the expert adults' changes were Meaning Changes" (Faigley, Witte, 407). This leads us to the conclusion that students (and probably their professors as well) stress correctness over content because we have a population of inexperienced writers and these errors are the easiest to find and document. Attention to surface detail should not be the primary focus of revision.

Few of us are fortunate enough to write perfect prose on the first attempt. Use your checklist of grading criteria as a framework for conducting peer reviews. The most effective peer reviews are guided. So give your students clear and specific instructions for their comments. Layering peer reviews can be helpful as well. Spend the first ten minutes of one class period and have them look for a clear thesis and development in another student's paper. Then in a subsequent class meeting, let them check each others' papers for sentence level errors. In another session, attend to mechanics and surface detail (spelling, punctuation, word choices, etc.). If student writers demonstrate difficulty writing a clear effective sentence, suggest they read the paper backward sentence by sentence. This destroys the continuity and forces the reader to focus on each sentence. If they have word-level difficulties such as usage problems (to/too; advice/advise) or spelling errors, have them read the paper backwards word by word. These techniques force the writer to focus on the problems and not the flow of content.

Resist the urge to grade everything:

Writing assignments that are conducive to thought need not be polished (such as Writing to Learn activities). Develop "exploratory" assignments that encourage critical thinking and simply give them credit for the writing without being judgmental. Or simply give them some credit for accomplishing the writing task. We learn by doing. By removing the anxiety of a grade, students might feel less inhibited and concerned with "correctness." This frees the student to tackle

the problem first, and attend to the particularities of the writing at a later time.

Stress the fact that all writing takes a "form.": Teach Aristotle's "rhetorical triangle" (Figure 1) which suggests that knowledge of the audience dictates form, style, tone, vocabulary, and organization of writing. Within the IS/IT discipline there are many appropriate combinations of these writing characteristics. Encouraging students to browse through the professional journals or examine "real world" documents will be beneficial to understanding appropriate models for writing. Models provide an appropriate format for the writer to convey the message to the intended audience.

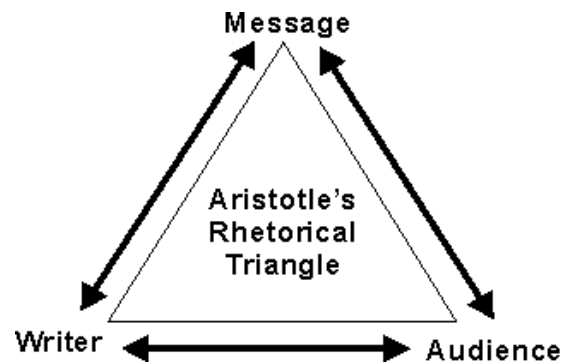


Figure 1. Aristotle's Triangle

Make them responsible for their writing:

Most universities have writing centers that can provide assistance, but the instructor does not need to know the grammatical terminology to indicate error. A simple "this doesn't sound right" or "you lost me here" is sufficient. Or simply circle an error and let them decide what is wrong. Students will gladly let you take possession of their writing. Remind them that how clearly and effectively they write is ultimately their concern—not yours. The communication is not complete until the reader understands the exact message the writer intended.

4. CONCLUSION

Whether we like it or not, all college teachers are writing teachers. For most of us, reading, writing, reflecting, and analyzing are one activity—the interaction of the individual with the world of ideas. It is an activity we engage in effortlessly, and is so much a part of our academic lives, we rarely consider the various separate skills we possess in order to achieve this. However for the

great bulk of our students, this is not the case. The power of clear, concise, meaningful prose (skills formally learned from grade school through the college Freshman English sequence) should be reinforced across our discipline. Perhaps these tips and techniques will stimulate the improvement of writing without impacting course content or overburdening the professor

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