

Chapter 7

Sharing Knowledge by Publishing

Learning is the product of education, and this product should be shared among students and faculty. Students are just a few years, months, or even days away from having a job in which they will be required to share what they know and do with others. Professors already have such a job, not only as teachers but also as authors and researchers who publish the results of their work in books and journals.

Knowledge is empowering, and its power can be shared by publishing. Professors in many colleges and universities are not only expected to publish, they are compelled to publish or they will not be tenured. While the appropriateness of the “publish or perish” approach is often debated, it does compel professors to share their knowledge and the results of their research with other professionals.

Think of college students as embryonic professionals acquiring the knowledge and skills to do what professionals do—acquire new knowledge and share that knowledge and their skills with others. When should the professional learning process begin? At graduation? The first day on the job? After a period of apprenticeship? *It should start in the first college course and continue through the four years of undergraduate education (Moen et al. 2000).*

FROM TERM PAPERS TO PUBLISHED AUTHORS

While knowledge can be shared in different ways, publishing student work electronically motivates the students greatly. With computers and networks now being the norm, student publishing can be done easily on a local area network.

A Course Continuum

With the availability of hypertext software in 1991, I made the decision to require my students to write a computer-based file that could become part of an electronic information system in a local area network rather than writing the traditional term paper. I wanted the students to share their writings with each other rather than have them write another term paper to be graded and discarded. The students did not object to the idea, but four seniors stood before my desk crying real tears because they had to use a word processor rather than a typewriter! One had spent all evening in the library just trying to figure out how the word processing software worked, and hadn't accomplished a thing. That was just over 10 years ago. Now, the students would be crying if they were required to use a typewriter!

Since current students use word processing routinely and will be using electronic information processing during their careers in ways we can't even imagine now, it is very important students to learn how to share their knowledge. In this chapter I will share my experiences with student publishing and student editors with the hope that it will make it easier for professors to begin using this powerful motivator of higher quality writing by undergraduates.

Writing to Convey Information

How many term papers are written each year by capable and sincere students in colleges and universities across the country, only to have the term papers graded and discarded? If some of these are not of high enough quality to warrant publishing, what kind of miracle is expected of the student when they have to write their first report on the job? What can be done to help students improve the quality of their writing to make it worth publishing? Should they be sent off

to another writing class? Isn't it better to have professors in all subjects help their students bring their writing up to publishable quality while enrolled in their courses?

When students are given the responsibility to write to convey information to other students rather than just submitting a term paper to be graded, the meaningfulness of a writing assignment increases immediately. Since most students do not want to share poor writing with their peers, writing quality is enhanced simply by making term papers available to all students, which can be easily done in electronic information systems. What considerations should one make when implementing a system of student publishing? Begin with the premise that *authors are made, not born*.

Authors are made, not born

While writing is an essential skill learned early in life, authors of different kinds of publications learn how to write according to styles suitable for the content and the publishing outlet. Giving students opportunities to be published authors, even if it is in an information system confined to a local area network, makes students feel good about their writing because they know others will read it. Students want to be better authors when they know their work will "live on" after they finish the course. *The pride I observed in my students when they saw another student learning from one of their publications in our information system was very obvious.*

Writing improves with regular practice and helpful editing. Editing help should come early in the writing effort, not at the end. Grading term papers at the end of a course, even if helpful editorial comments are included, does not help students improve their writing while they are in the

course. Helping students write better by editing just a page or two of their first draft provides an early opportunity for providing editorial advice.

Authorship and ownership considerations

Student publishing raises several authorship and ownership considerations. Students may author their publications alone, with a co-author, or as a group. Student authors have ownership over what they have written, and there is much for them to learn about author contributions, proper credit, citations, and the potential for plagiarizing.

Authorship is based on contributions. Student authors should learn that authorship should be based on the contributions of each author to the publication, similar to publishing in professional journals where a senior author is assumed to be the major contributor. With electronic information systems, students can improve on publications of previous students while learning to recognize the contributions of different authors and arrange authorship accordingly. Students who makes slight editorial changes to earlier publications should just be acknowledged, minor contributions could be recognized by being listed as a junior author, and major contributions should result in a senior authorship. Judging the relative contributions of each author is a good experience for students. *Improving existing files is a legitimate publishing procedure; we call such improvements second, third and fourth editions of books.*

Ownership and copyright considerations. Ownership of written materials indicates the “source” of information and may or may not mean protection. Students that publish, even on local area networks, must learn the meaning of ownership and copyright. They need to learn that it is illegal and unethical to copy the work of others and claim it as their

own. Authoring opportunities give students the chance to make real judgments on what is appropriate and what is not regarding ownership, quotations, giving credit to others, and proper citations. *Student authors learn the real meaning of ownership when they share their work with others rather than protecting it from others.*

USING WRITING TEMPLATES

Students have usually been given guidelines to follow when writing the traditional term papers. While professors want students to write creatively, guidelines provide a framework within which creativity is to be expressed. Professional journals distribute guidelines to be followed. When students publish their work on a local information system, guidelines are needed to provide consistency in format and style.

A typical format for scientific publications that could be followed by students publishing electronically contains the headings shown below. They can be modified according to the protocol used in journals in different subject areas.

- *Title & Author(s)*
- *Abstract (a clear paragraph describing what was learned)*
- *Introduction (to the research conducted)*
- *Literature Review (of pertinent published literature)*
- *Methods (describing exactly what was done)*
- *Results (in table and graph form)*
- *Discussion (of the results and their implications)*
- *Summary (of the entire publication)*
- *Literature Cited (complete citations to all references)*

A ***Written and Oral Communications System*** was prepared for the student authors in our Cooperative Learning

Center (see the Preface). This system contained many different templates for the students to download when writing different kinds of publications for our local area network. Templates provided each student with the basic structure of a publication with headings that could be appropriate.

The introductory file in the ***Written and Oral Communications System*** contained a description of each of the templates, and students could download the desired template from this introductory file. They could also print the introductory file and every file in the entire Information System, if they wanted hard copies. *Note that printing by the students when they needed hard copy replaced the usual distribution of handouts in class.* The menu contained the following writing templates:

- Written Communication Guidelines
 - Writing a Resume
 - Writing a Cover Letter
 - Writing a Letter of Application
 - Writing a Letter of Appreciation
 - Writing Job Announcements and Descriptions
 - Writing Review Papers
 - Writing Research Plans
 - Writing Research Objectives
 - Writing Research Proposals
 - Writing Progress and Final Reports
 - Writing Executive Summaries
 - Writing Scientific Papers
 - Writing Briefing Papers
 - Writing Book Reviews
 - Writing Decision-making Recommendations
 - Writing News Releases

The templates not only relieved each student of the need to recreate the appropriate structure each time they prepared

a particular kind of publication, but it also made peer editing, discussed next, much easier. Similar guidelines were provided for oral communications.

PEER EDITING

When students become excited about being “published” authors, they want to write more than if they are limited to traditional term paper assignments. Professors may not be able to keep up with reading all that the students want to write, nor should they be expected to. A publishing protocol can be developed that distributes responsibility for editing among student authors, just as professionals do in professional journals.

Student editorial boards

A major part of the responsibility for editing files to be published electronically can be assumed by a student editorial board. The editorial board in the Cooperative Learning Center was composed primarily of undergraduate teaching assistants (see Chapter 8). The student editors learned not only about the editing process, but also about evaluating the contents of manuscripts and the psychology of authorship.

Peer editing was a very good learning experience for students. They became more critical of their own writing after editing the writing of others. Peer editing gave students a greater sense of ownership in the information system. It was obvious that students have more pride in student-authored and student-edited publications than in term papers that have simply been graded by the professor.

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Having student editors encourages new student authors because they will recognize that students have meaningful roles in the publication process, and in a cooperative learning environment, students expect help from other students. Knowing that student editors have published in the information system gives them credibility as editors in the eyes of new student authors.

Having a system of peer review and groups of student editors places responsibility for good writing on the authors—the students themselves—where it belongs. Providing opportunities for students to publish their work enlarges the potential usefulness of their writing at almost no cost, especially on a local area network.

Editors, both students and professors, should give meaningful constructive criticism while being sensitive to the author's feelings. Writing is a very personal thing, and submitting what an author feels is good writing only to have it torn apart by editors can be very disheartening, whether the authors are students writing for a local area network or professors writing for a professional journal.

Quantifying student improvement

Student editors can help faculty greatly by reducing the number of editorial comments that might be needed in successive drafts of manuscripts submitted for publication. The number of comments by myself and my student editors on 6 successive drafts of student papers were counted in 1997; the total number of comments dropped from an average of almost 70 on the first draft to about half that number on the second draft. By the 6th and final draft, the average was only about 5 comments and they were primarily copy-editing comments (see Moen et al. 1998).

The first drafts averaged about 50 copy-editing comments, 12 style comments, and 6 content comments. This indicated how little attention students were giving to the style and format of their writing when it was subjected to publishing standards. This can be attributed to a lack of conditioning as students, up to this time, had been writing term papers without having to make corrections until professional-level publication standards had been met.

We also learned from quantifying the editorial comments that while student editors identified many errors, professional-level editing by the Editor-in-Chief (Professor Moen in this case; that's me!) identified several errors that student editors had overlooked. Even though I found a number of copy-editing errors after students had edited two or more drafts, the edited drafts were much better than the first draft of a typical term paper. Further, student editors improved with experience.

EDITING PROTOCOL

Student editing is not accomplished by simply asking students to serve as editors. They must learn a professional protocol and receive editorial guidelines, just as professionals do when receiving a manuscript to be edited for a journal.

Clarify mechanics first

The templates discussed earlier in this chapter relieved student authors of the responsibility for designing their own publications. While students had no excuse for not submitting publications in the proper form because they had access to the guidelines and every publication in the information system was a model for them to follow, most of

them had not been exposed to this level of discipline in their writing before. They quickly learned that their manuscript would not be accepted for the first editing unless it was formatted properly, just as professors learn to follow journal guidelines when submitting manuscripts for publication.

Encouraging student authors

Students who are expected to publish need more help and guidance when writing their papers than is the case when they just write a term paper to be submitted for a grade. Professors should work with the students early in the writing process, editing the introduction with the student and explaining why some sentences are good, some are vague, some are wordy, some are excellent...and encouraging the student to be more critical of their own writing as they continue. It is so important for students to learn to edit as they write, minimizing later editing by student editors and the professor. Some additional thoughts about editing as students prepare publications to be shared with others follow.

Commendations. Student authors are encouraged by positive comments on good writing. Every manuscript will likely have some good writing in it and should be highlighted before suggestions for improvement are made. *Commending young authors first and then offering suggestions for improvement is the acceptable procedure.*

Suggestions for improvement. Suggestions made by student editors for improvements in both content and style will likely be well received by student authors, especially after some good points about their writing have been made. Student editors should also realize that when content is beyond their scope of knowledge, they should enlist the help of other student editors or professors. Student editors should

also realize that suggestions for improvements should be made only until changes make the writing better. *If suggestions make the writing different but not better, it is time to stop editing.*

Quality expectations. High quality writing must be expected of student authors if their publications are to be a valuable resource for other students. Writing less but writing better is a good guideline to follow. Isn't it reasonable to expect students to author professional quality publications? If not, then we are saying that the writing of graduating seniors will be less than professional when they take their first job, unless a miracle happens and they suddenly become professional writers upon receiving the degree. Yes, it is reasonable to expect students to author professional quality publications, but they need the help of others, both students and teachers, in order to do so. *Professors with many years of experience benefit from the editorial comments of their peers when they submit manuscripts for publication in professional journals; the same opportunity should be made available to students.*

INFORMATION SYSTEM PUBLISHING

Electronic student publishing needs to be organized well, easily accessed, and flexible so that articles may be edited, added to, and in some cases, deleted. Student publishing would not be feasible to any great extent were it not for electronic Information System Publishing. It is so much more flexible than publishing printed copy.

Sharing knowledge and ideas efficiently, which means electronically, should increase the potential for learning because students are no longer slowed by mechanical access to printed information in books and journals. Further, publications can be dynamic; calculations, for example, can

not only be described but also downloaded for students to use. Links to related information can be inserted. The potential is almost endless.

What kind of work can be published electronically? Several different kinds of files representing a variety of creative opportunities for sharing information and knowledge can be included in an electronic information system.

Text files

Text files are the basic building blocks in an integrated electronic information system. The text file should have a title that clearly indicates the content, and key words can provide additional information about the content. Links provide access to related information, and searches provide lists of other files that contain related information.

Readers in an electronic information system can access definitions when they need them with hypertext links, just as we do when using electronic dictionaries in our word processing. When student authors identify new words and key words in their writing and establish links to definitions for the benefit of the readers, the authors become more conscious of the material they are writing about and the new ideas they are sharing with other students.

Supporting files

Text files can also include a variety of other files that enhance the word-based explanations and provide more interaction between the reader and the material in the text file. Some examples are described next.

Image and video files. Electronic information systems can include images and video clips that compliment text

material. For example, a description of the taxonomic characteristics of a flower is enhanced by an image of the flower. In addition to reading an excerpt from a speech, a link to a video and audio clip of the speaker provides a powerful supplement to the written word. Links to images and video clips provide supplementary information when it is needed, which is the most meaningful time for students to access it.

Calculations and graphs. Readers can link to calculations and graphs in electronic information systems, not only to complete complex calculations but also to visualize the results. This is especially meaningful when students enter different values and see the effects that variability in different parameters have on the relationships being studied.

Quizzes and tests. Electronic information systems can include quizzes and tests for students to access whenever they want, or as part of formal testing procedures in a course. Quizzes can be useful pretests, and as indicators of comprehension as students learn new material. Built-in scoring and grading, options for retrieving correct answers to questions that have been missed, and calculations of letter grades can be part of electronic testing systems.

References. Additional references in a subject area, as well as literature cited in a file, can be made available by links in an electronic information system. Electronic access to library resources is now routine; “going to the library” is becoming an electronic event rather than a physical one.

Other Communications

Students benefit from preparing a variety of communications to be shared with others, improving their communication

skills and gaining recognition for their work. While writing courses are commonly required of college students, there are relatively few opportunities for students in traditional text-lecture-test courses to continually improve writing skills. Many other kinds of communications can be incorporated into an information system. Professional-quality newsletters, for example, can be easily prepared with word processing and distributed in printed and electronic form. Students enjoy writing news releases and distributing them electronically to others in their learning environment. All of the written communications for which templates listed earlier in this chapter could be published on a local information system.

Information system menus

Accessing the files in an information system should be easy, logical, and intuitive. Web sites, which are information systems, have a variety of front-end designs. Some are simple and load quickly; others are more complex and load more slowly. Since web site design is not within the purview of this book, an example of a simple menu approach is given here to provide a starting point.

Menus can be arranged in many different ways, and there can be more than one menu organization for an information system. In the Cooperative Learning Center that is described in Chapter 8 and for the course continuum described in Chapter 9, menus provided access to courses, species and subject areas. Abbreviated examples are given below.

Course-related menus. I wrote, with the assistance of my graduate students, concept files for each of the courses in

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the continuum that is described in Chapter 9. The course-related menu contained the following main entries:

- NR 104: Natural history information management concepts
- NR 105: Natural history information management applications

- NR 204: Natural Resource Modeling Concepts
- NR 205: Natural Resource Modeling Applications

- NR 304: Wildlife Ecology Concepts
- NR 305: Wildlife Ecology Applications

- NR 404: Wildlife Population Concepts
- NR 405: Wildlife Population Applications

- NR 410: Wildlife Management Concepts and Applications

- NR 498: Teaching in Natural Resources

Species-related menus. Species-related menus provided students with access to the files that pertained to a particular species. Note in the sample menu below that main headings are proper taxonomic terms, biological functions are listed first followed by the species, and titles are consistent for different species. *A logical system of file names helps greatly in the organization of an information system.*

- Odocoileus virginianus* (white-tailed deer)
 - Body composition, white-tailed deer (*O. virginianus*)
 - Body temperature rhythms, white-tailed deer (*O. virginianus*)
 - Food habits, white-tailed deer (*O. virginianus*)
 - Weight rhythms, white-tailed deer (*O. virginianus*)
- Alces alces* (moose)
 - Body composition, moose (*A. alces*)
 - Body temperature rhythms, moose (*A. Alces*)...etc.

Subject-related menus. Subject-related menus listed typical subject areas but not specific courses. They identified files in the network that pertained to the subject

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area. An abbreviated subject-related menu is shown on the next page.

- Anatomy and morphology (files names would follow)
- Behavioral ecology
- Natural History
- Nutritional ecology
- Physiological ecology (sample file names are given here)
 - The concept of biological time
 - Baseline metabolism
 - Body temperature rhythms, white-tailed deer
 - Chemical composition of milk, white-tailed deer
 - Chemical composition of milk, moose
 - Physiological thermoregulation
 - The concept of homeothermy
 - The thermal energy environment
 - The critical thermal environment concept
 - ...and any number of files could be added

The examples above illustrate how the same files may be accessed from different menus. Search functions and links can also be used to find files with related information. Only the imagination and skill of the designer limit the design of the front end of an information system. *Students can be a great help to professors when designing an information system for an integrated learning environment.*

CONCLUDING REMARKS

If both students and teachers are empowered with knowledge, that knowledge should be shared not only with other students in a course but with students in other departments, colleges, the university, and even the rest of the world. Electronic information system publishing provides students with unprecedented opportunities to share their valuable work with other students, *and student publishing*