Computers in the Composition Curriculum: Looking Ahead

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Many writing program administrators fight so long to get a computer lab or classroom for their program that they think the battle is over once the machines are in place. We would argue, however, that a strong computerized writing program focuses on writing, not on computer technology. Computers are only machines; their effectiveness depends on using them to reinforce the theories that inform our pedagogy. As writing program administrators, it is our responsibility to determine the role computers play in the teaching of writing.

If we are to make informed decisions about the role that computers should assume in a writing curriculum, we must discard the myths that have fed our love/hate relationship with computers. Instead of believing that computers will solve all of our problems or will create a depersonalized monster that we cannot control, we need to consider realistically how computers are likely to change writing programs in the future. In this article, we want to explore three ways in which we think computers will significantly affect the teaching of writing. First, computer-based classrooms will enable new forms of dialogue and collaboration among students. Second, new computerized research methods will give students greater access to information. And, finally, computer technology will change the way we perceive texts and the kinds of texts we create.

These changes are neither obvious nor dramatic. We are not predicting that computers will revolutionize writing programs or that they will necessitate a new pedagogy. But it would be naive to assume that computers will have no effect on teaching writing. The question is how. As writing program administrators, we can control how computers are used and determine the role they will play if we understand the types of changes to expect.

Computers and Collaborative Learning

One of the most tangible ways in which computers will affect the teaching of writing is to change the physical environment in which we teach. In the past, many schools created microcomputer labs or added computers to existing writing-center programs. Typically, students and teachers used these labs as an adjunct to the classroom. Although teachers usually

met with students in the lab initially to introduce them to the computers and the software programs, classes did not meet there. Instead the students scheduled lab time on an individual basis, often writing rough drafts of their papers with pen and paper and then taking the drafts to the lab to work on final drafts. Thus, the computers were separate from the students' primary learning and writing experiences. The teacher might talk about how to use the computers for writing, and the students might use them to produce and edit their final drafts, but the computers were not part of the classroom and, therefore, not part of the actual teaching environment.

As computer technology has become less expensive and less intimidating, many English departments have developed computer-based classrooms. These classrooms are equipped with a computer or terminal for each student. Ideally, the computers are connected to form a "network" on which writers communicate, intervene in one another's texts in a variety of ways, or create a text jointly. In such a classroom students use computers to plan and compose their texts as well as to edit and revise them. They do not view computers as fancy typewriters but as tools for writing.

This change from teacher-centered, to student-centered, computerized classrooms reinforces a model of teaching that most of us believe in but often fail to implement because the old model of lecturing is so firmly entrenched. As Aronowitz and Giroux remind us, the best teachers and tutors function not as authority figures but as "transformative intellectuals," who make "the pedagogical more political and the political more pedagogical" (36). Transformative intellectuals "take seriously the need to give students an active voice in their learning experiences" (37). Although in the past the computer has all too often merely been used to deliver predigested lessons to passive students, it has the potential to help a teacher generate among students an honest discussion about language and form and idea. The result can be a classroom in which students have a voice in what they are learning and why they are learning it. When a computer classroom is designed as a communication network, the teacher can use the computers to enable dialectic, to subvert order, to give students a voice with which to question or to make and support claims.

How might this happen? How might the teacher as transformative intellectual use the computer to engage in dialectic? One approach is to put class logs, or journals, on a computer network.* In the past, computer networks have most often been used as a lecture base or an information retrieval system. But they can also be used as a communication network that gives students access to one another. The students do not all have to be in one place at the same time to have a conversation. They can put their ideas on the network any time and send them out for others'

responses. They can even change the direction of the course, thus realizing the goals of a radical pedagogy in which students help determine the lessons and even the language of a course.

The networked class log can serve as an alternative to individual journals in which students write in isolation about concerns that ought to engage an entire class. Such journals do not enable dialogue. They merely reveal that the writer has worked through difficult problems and recorded discoveries, but, unless there is a way of sharing those discoveries, they remain for the teacher and student to read. As a result, no sense of community is created. In contrast, the networked class log allows an entire class to enter the conversation with the leisure to write out what they are thinking and ask peers for feedback rather than trying to enter into an oral class discussion that works for some and not for others. Using networked computers, these students see themselves and others as writers and thinkers.

Thus computers set up as communication networks hold promise for that radical pedagogy—one that does not abandon students to a predetermined lesson but allows them to engage in conversation, to write collaboratively, to ask honest questions, and to make their own judgments about what they and their classmates have read and written.

Computers and Research

Another way in which computers are changing writing programs is in the area of library research. In designing writing assignments, we typically ask our students to research topics in libraries where computers have radically changed once familiar research processes. It is not unusual today to see computer terminals in all areas of the library—reference, circulation, documents, and special collections. As writing program administrators, we need to be aware of the changes computers have made in the storage and retrieval of information so that we can incorporate instruction in computerized research methods into the writing curriculum.

In most libraries today, online catalogs, designed to provide access to library materials (circulation, cataloging, location of information), go beyond the capabilities of the traditional card catalog by allowing subject searching that is much more rapid and focused. Using an online catalog, a student can search for a combination of terms (e.g., women, 1980, and advertising; aerobic exercise and joint injuries; or religious rhetoric and television), thus narrowing to a specific topic early in their research. But students must be taught how to use such search capabilities, must learn how to operate the systems, and how to choose and enter appropriate search terminology. Therefore, first of all, writing program administrators must ascertain whether librarians or English teachers are going to be

responsible for providing the instruction students need. Then, through consultation with library staff, they must integrate this additional instruction into the appropriate courses in the writing curriculum.

In addition to online catalogs, online databases provide students with search capabilities once available only to trained librarians. Now, using a microcomputer terminal and CD-ROM technology, our students can search the ERIC online database, Compuserve, or ABI-INFORM. Most librarians readily agree to train faculty in online database searching; there is considerable debate about whether they should provide the same training for students (see, for example, Champlin, Hamilton, Dreifuss, Deschene, and Penhale and Taylor). Some fear that students who use these searches will not formulate their own research questions but rather will allow the machines to formulate easily answerable questions for them. Others are concerned that students may find the computer mechanism itself a barrier to the research process and thus may become sidetracked or frustrated. However, our students' futures include databases of information, and the key to unlocking this information will be a knowledge of how to access it. In collaboration with library staff, we can give them this knowledge.

Ideally, students need to learn these information-retrieval skills as an integrated part of their course work. Library instruction that is divorced from actual class assignments is largely ineffectual. So we need to cooperate with librarians to provide our students in each writing class with an increasingly more sophisticated knowledge of computerized research methods.

For example, most first-semester writing courses emphasize expository and persuasive writing assignments requiring documented information for development and support of their arguments. Students at this level can learn some basic library terminology and how to use computerized databases. Working together, teachers and library staff can introduce them to the library and provide some hands-on experience with the online catalog and the Infotrac database (which indexes primarily magazines and journals in the popular press).

In a second-semester writing course, in which students write documented research papers, library instruction needs to focus on more sophisticated, subject-specific research tools (both in print and online) such as ERIC or ABI-INFORM. At this level students can learn to use the online catalog to find relevant government documents or to use the business databases to locate corporate information.

In an advanced writing or technical writing course, students can begin using the computerized tools within their own disciplines to locate and retrieve information. Library instruction at this level needs to be more specialized. For example, if librarians are willing, they can walk small

groups of students through model searches in their fields. This kind of immediate, hands-on instruction is particularly valuable to advanced students.

Using computers for information storage and retrieval will be an essential skill for writers in the future. As writing program directors, we need to educate our faculty about these new research methods, encouraging them to work with library staff members to give students access to the information that is available to them.

Computers and the Text

In addition to changing how we teach and how our students learn, computers are changing our perception of a text. The very fact that a writer can modify a computerized text with minimal effort reinforces the concept of a text as an evolving, dynamic phenomenon rather than a fixed, static entity. Because a computer text can be changed so easily and quickly, a writer begins to think of it not as fixed and constant but as fluid, much as a text that exists in human memory.

Even more significant is the effect that computers may have on our perception of how a text should be organized. Traditionally, western discourse has been organized in a linear fashion, with one idea or event leading naturally or logically to the next. A new computer phenomenon know as hypertext has challenged our traditional assumptions of the value of linearity. Hypertext was initially conceived as "a way to link interrelated information so computer users could jump from topic to topic, find related subject areas, and generally extract only what they needed from large quantities of information" (Hershey 244). In other words, instead of arranging information so that it is presented to the reader in a linear sequence, writers create what Stephen Tchudi describes as "a multi-layered multimedia, computer-accessed compilation of data and visual images" (27). The reader, rather than the writer, then determines what data to read and in what order.

Although it is tempting to think of hypertext as lack of organization, it is more accurately viewed as an alternate method of organization, one that is not based on linearity. In a reassuring analogy, David Burrell compares hypertext to a conversation:

> We've actually been speaking hypertext all our lives and never knew it. It's essentially nonlinearity of speech. The fact that pages have to be numbered because of the way books are built has led us into thinking that things need to be in sequence. (30)

Thus, with hypertext writers and readers can explore a topic in a fashion similar to that of two people engaged in a conversation. The writer supplies a body of information, and the reader gains "access" to that information in the manner that best suits his or her purposes.

Perhaps less dramatic but potentially more significant is the increased importance of document design that results when writers use computers. In an excellent *College Composition and Communication* article of 1986, Stephen Bernhardt urges composition teachers to do what technical writing teachers have done for some time now—to make students aware of the visual as well as the verbal features of a text. Not only does computer technology make this task easier, it makes it necessary. For, as Ben and Marthalee Barton have warned, because of the graphics capabilities of new computers, "our concerns with the characteristic under-use of visuals in student [papers] may well give way to its opposite" ("Toward a Rhetoric of Visuals" 136).

With or without our help, students will want to use (or overuse) the ever more inexpensive, freely available, and easily learned graphics packages and word processing programs that permit wide variations in illustration, format, and layout. The new "desktop publishing" programs create opportunities for document design that will prove inviting, if not irresistible, to students who grew up with *Time* and *USA Today*, not to mention television and modern advertising, which Marshall McLuhan characterizes as an "iconic" and "mosaic" replacement of traditional linear text (227). WPAs should look upon visual composition not as one more thing to add to a crowded curriculum, but as an opportunity—an opportunity not only to expand our students' textual awarenesses but also to enrich the composition curriculum with new theories from cognitive science (in the manner of Rubens, Rude, and Spyridakis and Standal), rhetoric (as in the work of Killingsworth and Gilbertson), and semiotics (see especially Barton and Barton, "Simplicity in Visual Representation," Barthes, and Silverman 14-25).

As rhetoricians we know that, with each alteration in a text, something is both lost and gained. Students eager to experiment with computer-generated graphic variations may produce a text that is visually exciting but rhetorically vacuous. But they need to be encouraged to view a text as a visual as well as a linguistic phenomenon. For example, there are several visual alternatives to the traditional essay format, including replacement of sentences with high-density graphics like tables and charts, the use of numbered or bulleted lists, use of headings and structural markers, and so on. (See Appendix for a more complete list).

With the possible exception of inserting photographs, for which a good optical scanner is needed, all of the options listed on the chart are made possible by readily available, relatively inexpensive software. Computer technology has thus hastened the time when composition must incorpo-

rate extraverbal communication—regardless of the artificial and increasingly meaningless divisions of college curricula that segregate skill in graphics from skill in writing. As film studies and mass media analyses have taught students to become more sophisticated consumers (interpreters) of visual texts, so we must help them to become effective producers of text by concentrating on the integration of visual discourse with verbal discourse.

Conclusion

Writing in the future, and we are not speaking here of the distant future but one that we realize daily, will increasingly involve writing with a computer. To be sure that our programs benefit from increasing computer technology, we, as WPAs, must be flexible enough to accommodate technological changes as they occur. The one constant factor in dealing with computers is change. As writing program administrators, we must try to keep informed of the changes and to react appropriately to them. If we react precipitously, we may well end up with programs and machines that we cannot use. If, on the other hand, we fail to take advantage of opportunities to acquire new hardware and software, we may not have what we need when we need it.

One way to keep informed of new products and developments is, of course, to keep up with scholarship in the field. Another is to communicate with other programs on our campuses that use computers, such as information services, computer centers, and business schools. Still another is to become part of a national network system such as Bitnet, which allows us to communicate easily and inexpensively with other WPAs who are using computers. And, finally, we can encourage our departments to hire at least one faculty member with computer expertise, who can then function as a support to the entire department, especially to the writing program as it expands its use of computers.

The love/hate relationship that we have been carrying on with computers is not a productive one. Falling in love with the technology or with the myth that computers will automatically improve our students' writing or make our jobs easier only leads to disillusionment and blinds us to the computer's real value. Rejecting the idea that computers can be a powerful teaching and writing tool is equally unproductive and constitutes a denial of the reality that confronts us.

A computer in and of itself creates neither good nor bad writers, nor does it guarantee either conservative or radical pedagogy. It is, however, a very powerful writing and teaching tool that can be effectively used or abused. It can merely deliver prescriptive lessons on grammar and mechanics, or it can enable students to construct their own meaning; it can take the place of a teacher, or it can enhance the teacher's effective-

ness; it can isolate students, or it can create a dialogue among students. The computer is most useful when it is part of a sophisticated, comprehensive program of instruction that is designed by writing program administrators who know how to use computers to put sound writing theory into practice.

*We are indebted to Marilyn Cooper for providing access to the computer logs generated by her students on a computer network.

Appendix

Alteration in Traditional Text	Possible Advantages	Possible Drawbacks
replacement of sentences with high-density graphics, like tables & charts	accessiblity, summarizing power, condensation, new sense of relations structured along an x-y axis	loss of coherence (too many graphics), loss of explanatory or analytical power (too few sentences), danger of reader "saturation"
use of numbered or bulleted lists	increased accessibility & readability	loss of coherence (too many lists), lack of sentence variety, ineffective subordination
use of headings, running heads, other structural markers, & information locators	new structural integrity, increased accessibility & readability	inadequate attention to transitions, neglect of verbal devices of structure
addition of functional diagrams, flow charts, & maps	freedom from linear constraints of traditional text, flexibility in showing complex relationships (such as simultaneity and recursion)	undervaluation of descriptive and imagistic power of language, decreased experimentation with figures of speech
addition of cartoons, photographs, & other icons that highlight or illuminate points of text	additional impact for important points, increased power to control tone (adding a light touch with cartoons, emotional impact with photos)	improper emphasis (text to be illustrated selected because of "visual possibilities instead of substantive significance—cf. TV news)
variations in font & type face	new power of emphasis, visual representation of textual hierarchies, & subject matter distinctions	neglect of traditional linguistic & rhetorical means of emphasis, introduction of distractions in "busy" text
inclusion of boxes containing nonessential but marginally interesting or helpful test	freedom from strict demands of thematic unity	failures of selectivity, uncontrolled inclusion of distractions, "competing text"

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