

A primer on computer literacy for writing program administrators and writing instructors

Bruce Herzberg

Nineteen-eighty-two was the Year of the Computer at the CCCC annual convention. There were seven sessions on computer-assisted instruction, including a demonstration of microcomputers and a session on teaching programming as part of a writing program. Bibliographies were distributed at some of these sessions. One bibliography contains fifty entries and a headnote indicating that it is a highly selective listing. Downstairs at the ERIC booth, you might have discovered that there are several categories for computer articles: "Computer Assisted Instruction," "Computer Assisted Testing," "Computer Managed Instruction," "Computer Oriented Programs," and "Computer Literacy." Computer Literacy. Now that hurts. How did this field get so far advanced? Where were you while all this was happening? What the hell is computer literacy? There's a new dispensation, and under it, most of us are illiterate!

If you have begun to consider using computers in your writing program, you will need to be at least minimally computer literate. You need to know what good it will do to add computer hardware to your other headaches, what to ask for, and how to get started.

It is rather difficult to take the first steps toward computer literacy by reading about it. It is far easier to sit down at a computer or terminal and learn to do something on it. Like learning to ride a bicycle, becoming computer literate is awkward at first, but later it is so natural that instead of telling someone else how to do it, you simply cry, "Climb on!" Very soon, I imagine, this analogy will be even stronger. When computers are as common as bicycles, they will be childhood conquests. Now, however, conquering the computer requires a large investment of money and time. The writing program administrator and the writing instructor need to know much before entering the computer age, so it is perfectly reasonable to expect a coherent description of what you do with a computer in a writing program and how you can get a computer to work with, if you decide you want one. [hope that this primer answers these and a few other pressing questions about using computers in a writing program.

In this primer, I will develop the premise that word processing is the most useful form of computer-assisted instruction in writing, and that other forms are of limited (sometimes *very* limited) usefulness in a writing program. Computer-assisted instruction (CAI) and computer-mediated instruction (CMI) consist almost exclusively of drilling and testing programs. Students in developmental courses and students who use the writing lab can answer questions on the computer screen and get an immediate check on correctness. But in many schools, word processing is becoming the chief

form of computer-assisted instruction. All writing students can use word processing because it is a writer's tool, not a substitute teacher.

I will try to describe here what it's like to use word processing; how to get some hands-on experience; how to get computers into your writing program; how to expand word processing as a form of writing instruction; and how to select forms of CAI other than word processing.

What it's like to use word processing

Word processing should be the most common computer activity that you and your students will engage in. Word processing can be done on any of several kinds of computers:

- large computers with many terminals
- small, self-contained microcomputers
- word processing machines or systems, which are microcomputers that will do only word processing.

The word processor is actually a program that runs on a computer-not a physical component or an independent piece of machinery. Virtually every computer made in the world today is capable of running a word processing program. so it is not necessary to have equipment specifically designated as a word processor.

The word processing program turns your computer into a fancy typewriter. Whether you work with a microcomputer or with a terminal that is hooked up to a bigger computer, you sit at a typewriter keyboard and a television screen. A computer is a bit harder to turn an than a typewriter-after you flip the switch, you have to type some introductory instructions or insert a diskette. It is important to remember two facts about the coded instructions and procedures that you must learn to operate a computer: every computer has its own set of secret words; and all of the secret words are in the manual. Don't be impressed by someone who knows the codes-that's easy stuff.

Once the word processing program is turned on, you simply type your text as you would on a typewriter and the text appears on the screen. When you fill the screen, the text "scrolls up," so you can continue to type along the screen's bottom line. The first difference between the typewriter and the word processor is that you don't hit the Return key at the end of each typed line-just keep typing. When you begin to run off the edge of the screen, the word you are typing jumps to the beginning of the next line. You can break off a line (at the end of a paragraph, for instance) by pressing Return. The "no-Return" feature is called "word wrap"-you and your students will find that it makes typing much easier.

The real power of the word processor is in editing the text that you have typed. The three chief editing procedures are deleting, inserting, and moving pans of the text. Each word processing program has its own set of commands for performing these operations, but the general idea is the same for every word processor. Use the arrow keys on the keyboard to move the cursor-the blinking square on the screen-over the letter you wish to delete or over the place where you wish to insert something or at the beginning of a passage that you want to move. Then type the appropriate command-To delete the letter under the cursor, you hold down the Control key while typing a letter key, such as "D." Most word processing programs use mnemonic codes like this. Control-D deletes a single letter. Control-W, in some word processing systems, deletes a whole word. Some word processors have commands for deleting sentences, paragraphs, and whole pages.

Similarly, to insert one or more letters, move the cursor, type the insert command (something like Control-I) and then type the material to be inserted. The text to the right of what you're typing just gets pushed down the screen. Because editing frequently requires replacing text (delete this and insert that), most word processors let you overtype. Give the command (say, Control-G) and what you type replaces text as the cursor passes over it.

Finally, to move text, you'll use "block" commands. Position the cursor at the beginning of the "block "of text to be moved (word, phrase, paragraph, anything) and type the "block" command (it's probably Control-B). Then move the cursor to the end of the block and type the block command again. The block commands will probably leave some sort of marker or symbol at the beginning and end of the block. Now move the cursor to the place in the text where you want the block to end up and type the "move" command (Control-M, no doubt). Almost instantly, the block will appear in the new position-

For many of our students, revising and editing are difficult because written or typed text physically resists change. When students succumb to this textual inertia, they do not learn what revising and editing are. But by making these essential writing procedures neat and easy, the word processor helps students overcome their resistance and experiment with their writing.

After you have worked with the basic functions of the word processor, you'll find that there are commands designed to make your work even easier. There are ways to move the cursor very quickly to key spots in your text-to the beginning and end, for example. You can search through your text for words and phrases-the cursor will jump to the word you specify and at your command, jump to the next appearance of the word, and so on. Moreover, you can replace the words you search for. When you discover that you've misspelled a word all through your text, you can fix it all at once. This feature has other uses as well. In preparing this article, for instance, I typed "wpr" instead of "word processor" and then let the computer replace the "wpr" for me.

Another useful feature of the word processor is that it allows you to save successive drafts of the same text. You might, for example, type in a text called Draft #1 and file it away. When you "file" or "save" a text on the word processor, the computer stores it electronically on a magnetized disk in exactly the same way that a tape recorder saves sounds by recording them on cassette tape. To work on Draft #1, you "play" it into the word processor. Doing this does not erase Draft #1 from the disk, just as playing a song doesn't erase it from the tape. This means that you can revise Draft # 1, change its name to Draft #2, and save it on the disk as a separate text. Later, you can go back to Draft #1 and revise it in a different way, or combine parts of several different drafts of the same essay-- no more uncrumpling pieces of paper to find the sentence that was, after all, just right. Here again, the word processor makes it physically easier to produce and compare successive drafts, to combine prewriting materials into drafts, and to connect the parts of the writing process as ideas and essays develop.

The final step in word processing is printing the text. Type the proper command (yes, Control-P, very likely), and the printer types out your text. You can insert some printer commands in your text if you wish. Such commands can change the size of the margins, print page numbers automatically, justify the right margin of your text, center lines of text, and so on.

The word processor is a powerful writer's tool. Even the most confirmed Luddite

will find it relatively easy to learn the commands and teach them to others. Using word processing in a writing course interferes very little in the normal teaching schedule. One class period for an introduction and demonstration should suffice. Thereafter, the students work during "lab" time. Whether you have your own lab or are sharing the school's computer lab, you should have tutors in the lab to help your writing students through the first sessions. Give students exercises that will get them to use the editing procedures. Encourage them to play with the word processor. Assign successive drafts to be done on the word processor, so they'll see the capabilities of the machine. Soon, both instructors and students will discover the positive effects of using word processing:

- **No handwriting.** Text always looks good, on the screen and printed out. Writers often find that the formal appearance of the printed text stimulates their interest in the formal features of writing.
- **Less permanence.** Text on the screen is easier to revise than text on paper. Writers are less committed to the first draft; intermediate hard copy is less permanent, too, since pressing a key will generate new hard copy.
- **Stimulating.** Many writers find that they produce vast amounts of material on the word processor, that quick composition and revision changes their style or makes them more aware of style, that they produce multiple drafts by rearranging the text in several different ways, which makes them aware of transitions.
- **No final typing.** When you're done composing, you're done with the paper.

In short, the word processor makes writers—and not only freshman writers—aware of new possibilities in their writing. Let the students discover their own writing methods. Some will write drafts, notes, and outlines before going near the machine. Others will draft at the machine. Some will make many intermediate hard copies; others will hold off until the bitter end. Encourage students to discuss their methods of composing on the word processor.

Incidentally, the students will realize that they are learning a useful skill—though you'll still have to listen to some whining about learning to type. Chiefly, though, both instructors and students will feel that the computer is an aid to writing, not just a fancy typewriter, especially if you add a few of the features noted later in this article.

How to get some computer experience yourself

Whether or not you decide that word processing is the right place to start with computers in your writing program, you can use word processing as a way to introduce yourself to the computer. If you should decide that it is the kind of CAI you want, you will need to be familiar with some of the available systems.

If your school has a computer center, start there. You may discover that your college computer is already set up to do word processing. If so, get a manual and get started. If word processing is not available, you should still be able to get advice from someone in the computer center, and it will be a worthwhile contact in any event.

If you have a friend who does computing, get her to help you with all this. She'll know a lot about it, and know someone who does know about it, and drag you to some computer stores to learn about it together.

Going into a computer store presents some problems. First, the clerks are trying

to sell you a computer, and second, the clerks may know little more about computers than you do. The solutions are simple, though. Be firm about getting a demonstration of word processing and clear answers to your questions. You may well get sprayed with jargon. Don't listen to it. If you can't get straight answers in English, go to another store—there's a Computer Land or Computer World or Computer Town on the next block. There are less visible computer stores, too: check the phone book. Don't limit yourself to Apple, Atari, Radio Shack, and Pet. Try Xerox and HeathKit, Texas Instruments and Hewlett-Packard. Big computer companies will also help you, so call Wang, Digital, IBM, or Honeywell if they have offices near you.

One bit of jargon worth knowing is the difference between hardware and software. Hardware is the part of the computer you can break with a hammer. Software means programs, the sets of instructions that make the computer do things like word processing. The only purpose of hardware is to make software work. Remember your first stereo? Probably, you were content with anything that would let you play your own music in your own room. Later on, you became attuned to wow and flutter, tracking weight, and RMS per channel. Stereo hardware consists of turntable, amplifier, and speakers. Software is the music itself. Computer hardware consists of keyboard, screen, processor (the guts), and printer. Software is the word processing program. Your first concern need only be to see how the thing works. Later on, you'll have no trouble with RAM and ROM, modems and peripherals, and all the rest.

Eventually, you should try to become familiar with one word processing system to get a sense of the variables and to have a basis for comparison. A thorough, unhurried demonstration or a well-organized, very short course may well be enough.

Getting computers into the writing program

Most schools are willing to spend money on equipment, and there are a number of foundations that offer grants for the purchase of computers. The problems are figuring out what kind of equipment and how much money to ask for.

First, of course, find out what computer resources are already available on your campus. Who can get access to the computer? Is it set up to do word processing? Are there plans to expand the computer facilities? Again, insist on clear answers. Computer people are unaware that there are any folks left out there who don't know all about computers. They probably want to help you but find it difficult to break free of the jargon all at once.

What you learn about available resources will determine your next step. You are likely to have three options:

- **Sharing your school's microcomputers.** It is not unusual for schools to invest in scores of such small, self-contained computers, as the Apple, Atari, and TRS-80. As with all computer facilities, access may be restricted to certain departments or courses. But if your school is committed to computerization, you may well be able to put yourself in the computer business with a short internal proposal.

Word processing software for microcomputers costs from \$100 to \$400. A reasonable beginning for a writing program would be to buy or get access to a half-dozen or more microcomputers—about \$3000 each—and a printer or two—about \$500 each. This is enough for some of the staff to learn word processing, to have a few sections of the writing courses, and some students from the writing lab experiment, and still be able to monitor use of the equipment. If you start from scratch this is the kind of setup you can describe in a grant proposal.

Sharing your school's minicomputer or mainframe. These are big computers, despite the name "mini." The computer sits in an air-conditioned room, where its lights blink and its tapes whirl. You get at it through terminals in the computer lab. The smaller minicomputers may have only a few terminals, while the mainframe, s may have hundreds. Word processing software for these may be standard equipment, or priced from a few thousand to tens of thousands of dollars.

As with microcomputers, you may be able to get some terminals in a room of your own, or get access to the existing lab. You don't have to use this equipment simply because it's there, but working on a large, powerful computer has many advantages. Indeed, a minicomputer that supports a dozen terminals is certainly as good a start for your writing program as a dozen microcomputers, and if you have one of your own, your students won't have to compete with the computer science majors for terminal time.

Starting from scratch. If there are no computers or if there is no room for more users on the existing computers, start to think about writing a grant proposal. Do some shopping. Most microcomputer companies will give you an educational discount, even for small purchases, and some will give you free computers if you're starting a program. Write to:

Apple Computer Inc.
20525 Mariani Avenue
Cupertino, CA 95014

Atari, Inc.
P.O. Box 16525
Denver, CO 80216

Commodore Computer Systems
681 Moore Road
King of Prussia, PA 19406

Epson America, Inc.
3415 Kashina Street
Torrence, CA 90505

Heath Company
Benton Harbor, MI 49022

Hewlett-Packard
1820 Embarcadero Road
Palo Alto, CA 94303

IBM Personal Computer
Armonk, NY 10504

Intertec Data Systems
2300 Broad River Road
Columbia, SC 2921

Osborne Computer Corporation
25600 Corporate Avenue
Hayward, CA 94545

Tandy Corporation
1300 One Tandy Center
Fort Worth, TX 76102

There are many other manufacturers of microcomputers, and new ones crop up all the time. A less well-known company may give you a good deal, but be careful -if the company goes out of business, maintaining your equipment will be very difficult.

The manufacturers of bigger computers will also give you educational discounts and, occasionally, award grants. Contact Digital Equipment Corporation, Maynard, MA 01754; Wang Corporation, Burlington, MA 01803; or IBM and Hewlett-Packard at the addresses above. These companies make both microcomputers and small mini-computers.

Finally, work up a proposal for a "seed" system -a few micros or a mini. You will need to design an experimental program, determine how many students will use the equipment, how many hours a term each student will spend at the computer, where the computer will be housed (micros and small minis don't need special treatment).

how it will be protected, what educational goals it will help you attain, and how you will monitor the program. Some of these items, such as how many hours the students will spend at the computer, are difficult to estimate. But you needn't be too exact. Be sure to see the grant-development officer if your school has one. Getting computers into humanities programs is a hot issue, and several foundations (notably Sloane) have announced their desire to make funds available for this purpose.

Expanding word processing for writing instruction

A number of computer programs can be added to word processing software, such as spelling checkers and text analyzers. Such programs expand the word processor's capabilities as a writer's tool. A discussion of several programs of this kind appeared recently in *BYTE*, an excellent computer magazine. The author, Wayne Holder, writes:

Word processors have changed the way I think about writing. To be honest, I don't think I would even try to write if I didn't have a computer and a good text editor. A word-processor lets me *experiment* with my prose. It removes the fear of making a mistake. Nothing takes the fun out of writing faster than having to retype pages over and over again.'

Holder describes the embarrassment and anxiety caused by poor spelling and grammar. The anxiety, and most of the errors, can be eliminated by the computer. Many dictionary programs are available that will check your word processing text for spelling errors. These programs compare the words in your text with words in their "dictionary" files. If one of your words is similar, but not identical to a dictionary word, the program asks you if its alternative is what you really want. Holder is a programmer who is developing an extra-large dictionary that will work with several different kinds of word processors.

Other useful additions described by Holder are a word-counter, a simple punctuation corrector that will alert you to unclosed quotes or inconsistent punctuation, a rhyme-finder, and even an anagram-salver. Holder is working on a program for microcomputer word processors that will duplicate the HOMER text-analysis program now operating at USC. HOMER, based on Richard Lanham's *Revising Prose*, counts words, sentences, uses of "be" verbs, and prepositional phrases. It provides a graph of sentence length and prints out messages about possible problems caused by long sentences and overuse of passive voice. Such add-on programs as these are relatively inexpensive-about \$100.

Text-analysis programs don't make changes in the text. Students need to learn why too many prepositional phrases can be a problem, when to prefer the passive voice, and how to make changes when they are called for. Text analyzers are tools, like the word processor itself, not substitute teachers.

Many word processors give you extensive control over the form of the printed text. You can get automatic page numbering, running heads, superscripts and subscripts, underlining, a variety of typefaces and sizes, boldface and italics, right justification, columns, footnotes, graphics, horizontal and vertical centering, different alphabets, special symbols, reverse printing, electronic mail-the list of features increases every month.

All of these enhancements make the writer's work easier and more exciting. To add word processing to your writing program is to treat your students as writers by giving them useful and stimulating tools for writing.

Word processing can hardly fail as an aid to writing instruction. The more you and your students use the word processor, the more you'll want to use it. Word processing makes no claim to improve the writing itself: it makes the work of writing easier. But other forms of CAI, such as grammar drills and computer-prompted composing programs, are supposed to teach writing. Drilling programs have a high dropout rate. After the gee-whiz effect wears off, most teaching programs become boring. Grammar drills simply can't compete with Space Invaders.

Reports on CAI experiments have an equivocal tone. They note "no consistent positive or negative effects," or "a high dropout rate,"³ yet urge us to experiment with similar programs. Positive results read like this: "Students gained an average of 2.4 months in reading proficiency during the months they used the computer."⁴ But for how many months did they use the computer? Again, "once content has been specified, the superiority of CAI to *teach* it is demonstrable. Even then, actual effectiveness can be deceptive." Frequently, a positive tone comes from statements about the potential of CAI: students can get more individualized attention; the computer can record results of workbook exercises and quizzes; students can do drills at their own pace; and teachers are able to use their time better. Nobody claims nowadays that teachers will be replaced by computers.

So far it appears that some drilling programs have some success with some students. A student at a terminal can get a handbook explanation of grammar rules, then do workbook exercises on the screen. A good program of this kind will give the student two or three chances to correct a sentence, show the correct answer if the student gets it wrong, show the rule again after repeated errors, and record the results of the session for the teacher. Some programs provide more examples and exercises if the student makes many errors and fewer exercises if the student consistently answers correctly.

Perhaps you are beginning to bristle at all this talk about right and wrong answers. This is indeed a problem. A drilling program will have a limited range of correct or acceptable answers. If the student comes up with an acceptable answer that the programmer didn't think of, the computer will regard it as incorrect. Most drilling programs, for example, reject answers that are misspelled but otherwise correct. Even for drilling, then, computers cannot replace teachers and tutors. In short, if you do drilling in your writing lab or basic writing courses, you may want to experiment with computer drills like this. Such programs are fairly inexpensive and will run on a wide range of computers. Be cautious about buying such programs. Test them before you buy. When you test a program, any program, try to make it fail. Most computer programs will do what they are supposed to do under normal circumstances. You need to know what they will do when the unexpected occurs.

A number of invention or guided-composition programs are becoming available. These programs engage the writer in a dialogue about his or her writing task. To use these programs, you type in your name and some preliminary information and the screen flashes. "Hello, Bruce! What do you want to write?" Bruce answers, "I have to write a paper about the Butlerian jihad." Computer: "What do you want to say about the Butlerian jihad?" Bruce: "I don't know where to start." Computer: "Well, let's start with a list of things we know about the Butlerian jihad." And so on. The computer can go on to suggest that Bruce consider the Butlerian jihad as a wave, particle, and field, that he divide it into parts and fill in a tree diagram, or that he analyze his audi-

ence. When the session is over, Bruce gets a printed copy of the whole dialogue—pages and pages of prewriting material.⁶

While guided-composition programs share the flaws of all free-floating heuristics, which tend to work better for personal topics than for academic-research papers, they may well help the beginning writers who simply cannot generate enough material. The growing interest in such programs suggests that similar programs for more specific writing tasks (like lab reports or close-readings of poems) may appear soon.

A problem with guided-composition programs, and some text-analysis programs as well, is that they do not work in conjunction with a word processor. That is, you type in all of your responses to programmed writing "prompts," but you cannot manipulate your responses as word-processor text—you'll have to retype the material. That is not a terrible drawback for a guided-composition program, though it is for a text analyzer.

One other potential problem: when you buy software, be sure that it will work on your computer. Most microcomputer software is written in BASIC, but different computers use different versions of the language. While programs can generally be translated from one language or dialect to another, translating can be expensive.

Buying software and other closing comments

Software for microcomputers tends to be inexpensive. Word processing enhancements and CAI programs are usually about \$100. You will find such programs reviewed and advertised in magazines like *BITE*. There are magazines for every brand and model of computer, magazines for microcomputers in general, for micros and minis, for general audiences and specialized audiences, for hardware and for software. Computer stores carry the more popular of these magazines. Computer stores also carry software catalogs, in which word processing enhancements and CAI are becoming increasingly prominent. And don't forget ERIC's five categories of computer-related materials, which include a great many reviews of CAI software.

Software for larger computers is somewhat more machine-dependent and expensive. Stay in touch with the manufacturer or dealer and become a member of the "users' group" for your system. The users' group is a good source of new software. Programs can be translated, remember, and larger computers may have facilities for doing the translating—so the magazines and ERIC reviews are still resources for you.

If you use word processing as your starting point, you'll find that computer literacy comes quickly. Word processing is a good touchstone for comparing equipment and software, and it's fairly easy to estimate your need for additional equipment after your "seed" system has been operating for a while.

Personal help and advice is very important when you're starting out. Contact colleagues at other schools who use computers in the writing program. Contact authors of articles on the subject.⁷ When you get close to a decision about choosing equipment, it can be very worthwhile to hire an independent consultant to sort out the vendor's promises.

Getting started is unavoidably awkward. But persist. Before you know it, you'll be computer literate.

Notes

¹ Bruce C. Appleby, "Computers and Composition," bibliography and presentation at CCCC Annual Convention, 1982.

² Wayne Holder, "Software Tools for Writers," *BYTE* (July 1982), p. 138.

³ Don Norton and Kristine Hansen, "The Potential of Computer-Assisted Instruction in Writing Labs," *Tutoring Writing: A Sourcebook for Writing Labs*, ed. Muriel Harris (Glenview, IL: Scott, Foresman & Co., 1982), p. 156.

⁴ Holly O'Donnell, "Computer Literacy, Part III: Classroom Applications," *The Reading Teacher* (Feb. 1982), p. 615.

⁵ Norton and Hansen, p. 160.

⁶ See Hugh Burns, "A Writer's Tool: Computing as a Mode of Invention," 1980, ERIC/RCS reprint: ED 193 693; and William Wresch, "Computers in English Class: Finally Beyond Grammar and Spelling Drills," *College English* 44, No. 5 (Sept. 1982) pp. 483-490.

⁷ Write to me at Bentley College, Waltham, MA 02254, or call 617-891-2950 or 891-2931.