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 DESCRIPTORS \*Microcomputers; Sentence Combining; Writing (Composition); \*Writing Instruction; Writing Skills  
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ABSTRACT One of the most valuable uses of microcomputers and word processors in composition instruction is in the teaching of writing revision. A number of activities can be carried out with these tools: for example, (1) after appropriate instruction on revision, students can be given prewritten text and asked to revise it on the word processors; (2) after a student has composed a text, the microcomputer can suggest that revisions be made; and (3) after a student has composed a text, the microcomputer can look for specific kinds of errors in the writing, mark the place where the errors occur, and require the student to correct them. Microcomputers and word processors may also be used to teach students sentence combining and how to generate and arrange content. (LLS)

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USING MICROCOMPUTERS FOR COMPOSITION INSTRUCTION\*

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ABSTRACT

Microcomputers are becoming increasingly available at affordable prices, thus permitting their use in a variety of educational settings. Such computers have word-processing capabilities that allow text to be generated, revised, and printed on the machine. Because of these features, microcomputers offer considerable power as supplemental aids to classroom instruction. In particular, the mechanical means for changing text can promote the active revision of student writings. Microcomputers and word processors are described, and the possibilities for instruction are discussed.

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## USING MICROCOMPUTERS FOR COMPOSITION INSTRUCTION

Bruce Cronnell and Ann Humes

Today we want to talk about some of the work we're doing at SWRL to develop composition instruction for use with microcomputers. We'll talk about some general features of microcomputers as they relate to composition, about what we're not doing, and about what we are trying to do.

However, we should first note that we're not computer experts; rather our backgrounds are in instruction. Our work is based on analysis of the composing process, and we have decided to use microcomputers because we think they can help us improve composition instruction.

The title of our presentation is "Using Microcomputers in Composition Instruction." When we mention this work to some people, the reaction is a question: "Using microcomputers in composition instruction?" Many people reason that you can't mix a humanistic activity like writing with a machine like the computer.

We think otherwise, and we'd like to indicate why.

First of all, it's important to remember that the computer is only a tool--it depends on humans to operate it. We humans can't write anything without tools. Originally we used stone and clay, then paper and pen, then pencils and yellow pads. Some place along the line we got fountain pens rather than ones that had to be continually dipped in ink. Now we have a variety of ballpoint and felt-tip pens. Surely we all appreciate these changes and don't want to return to quill pens or clay tablets.

Another major change affecting writing was the invention of the typewriter. A great many professionals compose much, most, or all of their writing using a typewriter. And most of us who use typewriters have been greatly pleased with electric typewriters--another technical advance that helps in our writing.

The most recent advance involves the use of a word processor that is tied into a computer. A word processor has a keyboard very similar to that of a typewriter, but your text shows up on a screen and is stored in the computer. What's especially valuable about a word processor is all the things you can do with your text after you've typed it (or while you're typing it). One thing you can do is to delete text--from a single letter up to a page or more. And when you've deleted something, the text closes up so that you can't even tell there's been a deletion. Similarly, you can insert any amount of text, and the word processor accommodates the added text. You can also rearrange text. For instance, you decide that you want to move a paragraph; with a few simple operations, you can move that paragraph anywhere you want it (even into the middle of another paragraph). With a word processor, you can also easily do minor, but nuisance, things like change capitals to lower-case (and vice versa) and reverse letters that have been transposed. These various machine functions permit you to change text in all sorts of ways. Then after you've made your changes (which can be at anytime, since the computer stores whatever you've done), you can print out your final text the way you want it. (And if you don't like what comes out, you can go back and change some

more.) In other words, the word processor is a great machine for revising.\*

Considerable research has indicated that revision is one of the most important parts of the composing process. But the research has also indicated that students don't receive very much instruction on the revising process and that they don't revise very much.

One reason that students don't revise is that it's a lot of work. It's easy enough to mark up a paper with all the changes--crossing off, drawing lines to move pieces, inserting new information. But it's quite another matter to recopy the whole paper. It's a very time-consuming, tedious, and unrewarding task. And when we recopy, we often make mistakes that have to be fixed up, leaving a product that still doesn't look too good. No wonder most students don't like to revise. It's a lot of trouble.

But with a word processor, the work of revision is much easier. Major and minor changes can be made without having to recopy. The changes take place right before your eyes, and you can read your clean revised text immediately. In fact, with a word processor, revision can be fun. Consequently, we are using word processors in writing instruction.

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\*The word processor can do a lot of other things that are also useful; but probably more of interest to a typist or anyone else preparing formal documents. For example, it can automatically place footnotes and number pages when it prints. You can easily make all kinds of changes in margin width. Or you can change spacing with a couple of quick operations. Although all of these features--and many more--are really quite marvelous, they're not critical for composing, which is what we're concerned with.

Now for a brief word on microcomputers before we talk about actual instruction. Microcomputers are small, self-contained computers. They get smaller and smaller each year; they also get more and more powerful. And, very importantly, they get cheaper and cheaper. Even at present, they are inexpensive enough for most school systems to afford at least a few. As the price goes down (and the power of the systems goes up), there is good reason to believe that before long, all classrooms will (or at least can) be equipped with microcomputers. Our work is preparing for that time when all students will have access to microcomputers.

But what can you do instructionally with microcomputers? Well, just about anything you can do instructionally with regular computers. But since microcomputers are much cheaper, you can do things that are more likely to be used with students. Also, some microcomputer systems have advantages less commonly found with full-size computers--for example, simple use of graphics.

However, we don't wish to do just anything. Computers have been long recognized for their usefulness as providers of drill and practice, or as complex programmed texts, or as mechanical workbooks. Although all of these uses can be appropriate for composition, they are not the focus of our work.

Instead (as you may have guessed from our emphasis on the word processor), our focus is on actual composing on a microcomputer word processor. We've only just begun our work in this area, so our comments will necessarily be suggestive.

Since we think that revision is one of the most valuable uses of word processors, that's one of our major focuses. We can do several things instructionally with revision; I'll outline a few of them.

1. After appropriate instruction on revision, students could be given prewritten text and asked to revise it on the word processor. The microcomputer could respond to student changes in several ways. It could refuse to let the student go on if a change is not made. Or if the student did not make the right change, the computer could make the change for the student and point it out. Other possibilities also exist.
2. After a student has composed a text, the microcomputer could suggest that he/she make revisions. For example, when two short sentences are found together, the computer could ask the student whether the sentences might be combined into one. When the same noun or noun phrase occurs in two consecutive sentences, the computer could ask the student whether the second one might be replaced with a pronoun. When a paragraph is very short, the computer could ask the student whether he/she wishes to add more information. Of course, the student wouldn't be required to make the changes suggested by the computer, but the approach is valuable because the computer interacts with the student while she/he is writing or revising. We could all be helped by having a personal editor to work with us. The computer can help to be an editor for the writer.
3. After a student has composed a text, the microcomputer could look for specific kinds of errors in her/his writing (e.g., spelling), mark the line/sentence/paragraph where the error occurred, and require the student to correct it.
4. The teacher could also act as editor, interacting with student writing in ways similar to those suggested above.

One of the first things we are doing with the revision process is to teach sentence combining using the microcomputer. Research indicates that sentence combining can help increase syntactic fluency and improve student writing. We believe that sentence combining can also

be valuable for the revision process. We have written instruction for sentence combining as a way to begin our study of composition instruction with the microcomputer. We picked sentence combining because it is based on a solid research foundation and because constraints can be built into it that make it amenable to computer-based instruction. For example, the expected output can be specified so that the computer knows what kind of response to look for. Moreover, because most elementary and secondary school students have had little experience with microcomputers and word processors, this seems to be a straightforward place to begin: A stimulus is given, and the student types in the appropriately combined sentence.

We discovered right away that programming even for such "simple" content as sentence combining is far from easy. Once we begin working with natural language, programming becomes very complex. Moreover, since we are permitting students to type in their own responses, there are theoretically an infinite number of possible responses. (Of course, we assume that students will seriously attempt to get the appropriate answer, but even so, "natural" mistakes are possible.) It's just not so easy as programming for multiple-choice instruction. We believe that working with sentence combining will be the most appropriate way for us and the students to begin--it goes beyond simple multiple-choice activities, but stops short of activities that require more complex programming and student-computer interaction.

The microcomputer can be valuable for another area of composition instruction--teaching students to generate content. Depending on the



type of discourse the student is to write, the computer could ask a set of heuristic questions about the subject. The student's answers could be stored for later use when the student is actually writing the desired composition. This procedure not only would help students generate content for a specific composing task, but also would teach them to use heuristic probes while composing.

We also believe that the microcomputer will be valuable for teaching students to arrange content. We noted earlier that word processors are capable of rearranging text. Computer-based instruction could teach students the arranging process and demonstrate the effects of various arrangements. It could then work with students as they attempt to arrange content for writing.

A more difficult instructional task is to have students use the microcomputer when they actually write. We haven't yet worked out the details of our ideas, but we think they're promising. One possibility is to present the student with a simple figure or pattern to describe (for example, an arrangement of geometric shapes). The computer could construct the figure/pattern as the student composed the description. If the student's description was appropriate, the original and the computer-generated figure would match. If they didn't match, the student could be helped to determine where his/her description was inappropriate.

Today we've suggested a number of ways in which microcomputers and word processors may be useful for composition instruction. There are many, many more possibilities than these--many that haven't even been thought of yet. Microcomputers and word processors are important tools

for business, industry, academia, and individuals; we also believe that they can be valuable tools for composition instruction.