## USING WORD PROCESSING IN COMPOSITION INSTRUCTION

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Interviews with professional writers (Crowley, 1958) and studies of writing strategies (Beach, 1976; Faigley and Witte, 1981; Monahan, 1984; Sommers, 1978; Stallard, 1974) have supported the hypothesis that the ability to revise successfully is a characteristic of good writers. Yet, revision is perhaps the "least researched, least examined, least understood, and—usually—least taught" (Murray, 1978, p. 85) aspect of the writing process. Studies of student writers have shown that they do very little voluntary revising (Emig, 1971; Mischel, 1974; Wall and Petrosky, 1980). When students do revise, especially if they are not very skilled in writing, they tend to revise superficially, concentrating their revision efforts at surface and word levels (Bridwell, 1980; Monahan, 1982; Perl, 1979). The title of an article about revision by Odell and Cohick (1975), "You mean, write it over in ink?" reflects the attitudes many students seem to have toward revising.

Recently, a number of writers and researchers have praised the editing and text moving capabilities of word processing programs and have proposed that these programs can be useful in helping students revise more readily and skillfully (Bean, 1983; Coburn, Kelman, Roberts, Synder, Watt, and Neiner, 1982; Daiute, 1982, 1983; Hennings, 1981, 1983; Monahan, 1982; Moran, 1983; Piper, 1983; H. Schwartz, 1984; M. Schwartz, 1982; Whithey, 1983). These authors have cited the computer's value in helping students revise by reducing the frustrations of recopying, by facilitating the reading of text during the various stages of the writing process, by producing neat, publishable copies from the computer's printer, and by making possible the reproduction of drafts of compositions for easy sharing with teachers and peers as the writing process unfolds. Womble (1984) observed that when using word processing to write, students stayed with a piece of writing—adding, deleting, moving text—longer than they did with paper and pencil and seemed to develop a better sense of audience. When word processing programs were used with young students for language experience stories, the students made more revisions in their stories using the computer than when the experience stories were done on paper (Barber, 1982; Bradley, 1982).

Some authors have proposed that using a word processor goes beyond simply making revising easier and actually gives the writer a whole new way of composing. The fluency that comes with the liberation from fear of errors may help writing to become the discovery process it should be (McKenzie, 1984; Olds, 1981).

Some computer programs have gone beyond being "the electronic pencil" and actually prompt the students to edit various features in their papers. Computer programs like *Writer's Workbench* (Macdonald, Frase, Gringrich, and Keenan, 1982) search student texts for certain errors in usage or various stylistic features. Preliminary studies have suggested that students do not resent the error-hunting aspect of such processing of their texts (Sommers, 1982) and that they carry over what they have learned about style and apply it to texts that are not run through a program (Kiefer and Smith, 1983). Spelling checkers can help students compose more freely in the first stages of their composing since they can concentrate on issues besides spelling as they compose. Spelling checkers will not find errors with homonyms, but the search and replace function of the word processor helps a writer who can identify his characteristic misspellings. The student can concentrate on one error at a time (H. Schwartz, 1984). Programs for young writers like *Quill, Wandah, The Writer's Helper, The Writer's Workshop,* and *The Writer's Assistant* provide guidance in prewriting, have a word processor, and present editing and rewriting aids (Marcus, 1984). In addition, teachers of writing have developed their own strategies and programs to help students use the power of the computer to write and revise more successfully (Newman, 1984; H. Schwartz, 1982; 1984).

Observations of students and attitude questionnaires have confirmed the motivational value of using word processing (Bean, 1983; Bradley, 1982; Daiute, 1982, 1983; Stromberg and Kurth, 1984; Woodruff, Bereiter, and Scardamalia, 1981-82). L. Meyers and T. Rosegrant used their *Talking Screen Textwriting Program* to help severely language disabled students gain access to written and oral language through the use of a computer (Trachtman, 1984). Learning disabled students who had experienced great failure in learning to write responded positively to the use of word processing (Kramer, 1984). Papert (1980) cited children in his MIT computer center who went from "total rejection of writing to an intense involvement (accompanied by rapid improvement in quality) within a few weeks of beginning to write with the computer" (p. 30).

Although there is great interest and hope directed toward the use of word processing programs to help students develop interest and skill in revising, research in the area has just begun. Collier (1983) found that the use of a text editor increased the number and complexity of revision operations and encourag-

ed greater manipulation of material at the word and phrase/clause level, but little whole text revision was accomplished by the students he observed. The quality of the student essays was not affected by the revision efforts of the students. However, Collier noted that the word processing system his students used was so difficult to master that much of their energy and time was devoted to learning to manipulate the word processing system itself. Sixth graders, in a study by Woodruff, Bereiter, and Scardamalia (1981-1982), perceived that the computer made writing easier, better, and more enjoyable. However, the use of word processing did not improve the quality of the written compositions.

The purpose of this study was to determine if the use of word processing programs during composition instruction for basic writers would result in a larger quantity of writing and more global revision while writing.

## PROCEDURE

### Subjects

The Subjects were 18 students in either fifth, sixth, or seventh grade who had been referred for remedial reading and writing instruction. Twelve students were male, six students were female. All of the students achieved a grade equivalent reading comprehension score of at least 3.6 on the *Metropolitan Achievement Test*. The highest score was 6.2, and the median score was 4.7. As indicated by their achievement test scores these students were below grade level in reading achievement, but they all had some facility with reading and writing and were higher achievers than a normal clinical population.

The 18 students were randomly assigned to two groups for the composition instruction. Nine students were assigned to the composition class in which word processors were used and nine students were assigned to a composition instruction class with no access to word processors. However, after two sessions, one male student was transferred to the word processing group, and a female student with high computer anxiety was moved to the non word processing group. Unfortunately because of this, randomization was lost. After the change, the word processing group had nine students, 7 males and 2 females, and the second group had nine students, 5 males and 4 females.

### Treatment

The classes met from 3:00 to 4:30 pm. two days per week. The word processing composition class met on Mondays and Wednesdays and the other composition class met on Tuesdays and Thursdays. The classes met for 12 weeks, so each student received 36 hours of instruction.

The same instructor taught both classes. She was a graduate student in reading education with a major research interest in the composing processes. She was also an experienced English teacher who had participated in many composition training projects. The major focus of the class instruction was composition strategies. The same lesson objectives were used for both groups. Objectives for the lessons included writing for various purposes and various audiences. The sessions stressed both narrative and expository writing; however more lessons involved expository writing. The five types of paragraph organization were also taught.

Students in both classes were taught prewriting skills, draft writing, revising and editing skills and were encouraged to use them. In teaching revising strategies, the emphasis was placed on global revisions rather than surface or word level revisions. Revising and editing groups were formed in both classes and students were required to consult with their revising and editing group at least once before they could consider a draft to be final.

All of the instructional objectives were identical for the two composition groups. However, in the word processing group, each student had access to an Apple IIE or IBM computer and the Bank Street Writer word processing software. A spelling checking program was also available for the students' use in the word processing group.

All students were encouraged to do their writing during the 90 minute class period. However, they were allowed to take compositions home to work on them if they desired. For the first three class sessions, the word processing students were given a keyboarding practice program in order to develop some facility with keyboarding. Because of this, the word processing group received less actual composition instruction than their counterparts in the other group. Two observers, both writing master's theses in reading, were present during many of the instructional sessions to observe some of the revision groups as they worked. The rough drafts and completed papers from 12 of the 16 writing assignments were collected for analysis.

## RESULTS AND DISCUSSION

Because students were assigned a certain number of specific compositions that needed to be completed, there was little variation in the number of compositions written by the two classes. Except for three compositions that were not written because of illness, each of the students in both groups completed all of the assigned writing tasks. In both groups, a few students wrote extra unassigned compositions.

Analysis of variance showed that there was a significant difference between the two groups for length of compositions. The mean number of words per composition for the word processing class was 96 and the mean number of words per composition for the non word processing class was 84. However, there was great variability within each group on length of compositions. One female student in the word processing group wrote consistently longer compositions than any other subject in either group. Without a covariate which measured entry level writing composition length, the significant difference between the two groups was probably due to this one subject. Holistic analysis of the compositions from both groups indicates that the length of compositions, with the exception of the one female subject, were approximately the same for both groups. Even though students in the word processing group had to take time for the keyboarding training, they managed to write as many compositions of equal length during the class as did the non word processing group. The necessity of learning a word processing program did not appear to inhibit the amount of writing done by students.

The rough drafts and final copies of six of the assigned compositions were analyzed for level and type of revision. Because strong encouragement to revise was given in both classes, students did substantial revision under both conditions. The

students had been told to turn in all the rough drafts which they did, thus the number of rough drafts done depended upon the students' choices. More rough drafts were turned in by the word processing group than by the non word processing group. This might have been due to the ease of producing printed copies.

There were significant differences beween the two groups when the papers were analyzed for level and type of revision. The non word processing class made 58 percent of their revisions at surface and word levels, (spelling, punctuation, and word substitution changes); 28 percent of their revisions at phrase and clause levels and 14 percent of their revisions at sentence and paragraph levels. The word processing class made 51 percent of their revisions at surface and word levels, 25 percent of their revisions at phrase and clause levels and 24 percent of their revisions at sentence and paragraph levels. Both of these groups did more revising than other studies have reported. This is probably due to the fact that one of the purposes of the class was to teach revision strategies and encourage students to use them.

An analysis of the quality of revisions showed that in most cases the revisions were improvements in the quality of the composition. Many surface and word level changes were spelling corrections. There were fewer misspelled words in the word processing group than in the non word processing group. In three cases a rough draft was redone with no changes except that it was rewritten in ink. This type of revision occurred also in the word processing group where two times a document was reprinted so that it would be double spaced.

Many of the phrase level changes in both groups were done in order to use a more precise word for the original word. Sentence and paragraph level changes were often centered around organizational changes for both groups, and these changes generally occurred more often in the early rough drafts rather than in the final revision stages. The use of more sentence and paragraph level revision by the word processing students might indicate that the ability to move sentences and paragraphs easily did help stimulate more global revisions.

Anecdotal notes from the observers in the two classes seemed to indicate that the presence of the computer screens appeared to facilitate more discussion and group editing and revising because the screen provided easier access to the print. Even though both classes were required to use editing groups, the editing groups met more formally but for shorter periods of time in the non word processing groups and more informally but for longer periods of time in the computer room. The observers noted that whenever the word processing group came to class, they placed their disks in the computer and immediately started to write or show others what they had written at the last session. The appearance of the work on the screen seemed to help focus student attention on the writing task at hand. This did not happen in the non word processing class. The students talked with each other, but because they did not immediately focus on their work appearing on the screen, they discussed other things. The effectiveness of the computer in helping students focus on the task at hand has been noted by other researchers such as Marcus (1984) and Newman (1984).

As noted by Woodruff, Bereiter, and Scardamalia (1982); Collier (1983); and Bradley (1982), the importance of word processing as a motivational tool was apparent. This was as true for the girls in the word processing class as it was for the boys. One of the computers was connected to a large screen monitor. Students in the word processing group were especially anxious to use this computer and have their work shown very conspicuously. The ability to produce many quality copies of their work for sharing with others also appeared to be motivational for students in the word processing group. Observers noted that students were much more willing to read the stories of others when they were printed rather than when they were handwritten. The printer used in the study was a high speed letter quality printer. Even though the compositions in the non word processing class were xeroxed for easy access for revising groups, the quality of some of the student handwriting made editing and revising more difficult.

The use of editing and revising groups seemed to be most effective when students were discussing audience. Observations of students working in editing groups showed that more discussion about revision occurred when they were discussing revising for various audiences than during any other global types of revisions. When trying to teach revision skills it might be helpful to begin with teaching about composing for various audiences.

## CONCLUSIONS

Word processing programs can be used to enhance the teaching of written composition. The results of this study show that students can learn basic word processing skills quickly with only limited practice, and that the use of word processing does have motivational value. However, the use of word processing can only enhance the teaching of written composition. The most important ingredient in any composition program is a teacher who is knowledgeable about the composing processes. Instruction in pre writing activities, organizational methods, draft writing, revision skills, and provision for publishing student work are necessary parts of any composition instruction with or without word processing. The use of word processing cannot substitute for good instruction in the entire writing process, however, helping students learn to compose and revise using computer word processing programs appears to have significant potential and needs to be investigated further.

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