DOCUMENT RESUME

ED 287 459 IR 012 844

AUTHOR Beal, Carole R.; Griffin, Elizabeth A.
TITLE Learning To Use a Text Editor.
PUB DATE Apr 87
NOTE 8p.; Paper presented at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Computer Assisted Instruction; Elementary Education; Grade 3; Grade 4; *Revision (Written Composition); Time Factors (Learning); *Word Processing; *Writing Skills
IDENTIFIERS *Text Editors

ABSTRACT

Designed to determine how quickly elementary school children can learn to use a text editor and what editing concepts are difficult for them to master, this study presents preliminary data on children's acquisition of text editor skills and on the kinds of revisions they accomplished with the text editor. Observations were made on a total of 25 children in one grade 3 and one grade 4 classroom who were participating in an ongoing project on the development of writing skills. Students were individually instructed on the Apple MacWrite text editor in four 20-30 minute sessions approximately one week apart and wrote on topics assigned by teachers as part of their regular classroom work. Experimenters took detailed notes on what the child typed, what changes were made to the text, what commands were used, and any comments or questions. In addition, the first and fourth sessions were videotaped. It was found that: (1) all of the fourth graders and 80% of the third graders had learned the basic keyboard commands by the end of the first session; (2) children found the mouse more difficult to learn than the keyboard commands; (3) the number of works produced increased across sessions for both grades; and (4) children made very few revisions affecting the meaning of their work--most changes were to correct typing errors, and revision rates decreased across sessions. It is suggested that children may begin to make more substantive revisions when they have more experience with the text editor as a writing tool. (MES)

(Presented at the annual meeting of the American Educational Research Association, April 20-24, 1987, Washington DC)

Learning to use a text editor

Carole R. Beal and Elizabeth A. Griffin
Psychology Dept., Dartmouth College, Hanover NH 03755

Research on the development of writing skills has shown that in elementary school many children rarely revise their work without special encouragement (Graves, 1983). Models of the writing process suggest that the many attentional demands of the task make it difficult for children to notice errors in their text, and that the mechanical burden of making corrections may also discourage children from fixing errors even when they are detected (Beal, in press; Scardamalia & Bereiter, 1983). In contrast, recent evidence suggests that writing on a computer may facilitate revision and improve writing quality (Daiute, 1985; Levin, Boruta & Vasconcellos, 1983). However, teaching children to use a text editor may also involve an investment in time and resources, and new problems may be presented by the particular features of the editor itself. Relatively little is known about how quickly elementary school children can learn to use a text editor and what editing concepts are difficult for them to master. The goal of this paper is to present some preliminary data on children's acquisition of text editor skills and the kinds of revisions the children accomplished with the text editor.

Method

Subjects. Observations were made on children in one third and one fourth grade classroom (n = 25) who were participating on an ongoing project on the development of writing skills. There were approximately equal numbers of boys and girls. The children attended a small elementary school in a rural, lower-class area of New England. Very few of the children had computers in their homes.

Equipment. Two Apple Macintosh 128 computers and one Imagewriter 1 printer were

placed in a small room between the third and fourth grade classrooms. The printer was shared by switching the connecting cable when a child was ready to print a composition. Children were also videotaped in their first and fourth sessions at the computer with a portable Panasonic 2400 VHS videotape recorder and camera. A mirror was placed behind the computer so that both the child's face and the computer screen were recorded on the videotape.

The Apple MacWrite text editor was used in the study. In contrast to many text editors favored by skilled adult writers, the MacWrite editor allows a relatively limited number of editing operations. The author types in the text and makes alternations in the same "mode," that is, there is no operating system distinction between text entry and editing processes. The text can be changed by using the backspace key to erase, or by using the attached "mouse" to select (highlight) and then cut (remove) parts of the text. The mouse can be used to move the cursor from one location in the text to another by positioning an arrow at the desired location and clicking the mouse button, which positions the cursor at the new location. The mouse can also be used to scroll the text up and down on the screen.

Procedure. Children were instructed in the Macwrite text editor over four sessions lasting 20-30 minutes each. The sessions were approximately one week apart. The children wrote on topics assigned by their teachers as part of their regular classroom work. For example, children wrote autobiographies, book reports, and reports of science experiments conducted in the classroom.

Children were individually instructed in the use of the editor. The experimenters had instructional goals for the initial sessions. For example, the goal for the first session was to teach the child the basic keyboard commands, such as the use of the shift key for capitalizations, the backspace key for simple erasures, and the return key. The goal

for the second session was to review the basic commands and to use the mouse to move the cursor from one point in the text to another. The goal for the third sesssion was to use the mouse to scroll the text on the screen up and down and to show the child how to select, cut and paste segments of text from one location to another. The experimenters attempted to introduce new text editor commands when the child encountered a suitable text problem. For example, if the child detected a text problem that was located much earlier in the text and the child did not want to use the backspace key (because that would erase all the subsequent text) the experimenter would introduce the use of the mouse to move the cursor back to the point in the text where the error was located.

The experimenters sat slightly beind the child, and took detailed notes about what the child typed, the changes he or she made to the text, what text editor commands were used and any comments or questions the child had. The children were also videotaped in the first and fourth sessions. The videotapes were used to note on the protocols when the child looked at the screen or the keyboard in relation to what he or she was typing. At the end of each session the child's work was printed out to take back to the classroom.

Results and Discussion

One goal of this project was to learn how quickly children could master a relatively simple text editor within the constraints of a classroom setting. The protocols showed that all of the fourth graders and 80% of the third graders had learned the basic keyboard commands by the end of the first session, in that they used the commands without prompting by the end of the first session and remembered the commands at the beginning of the second session. Thus, children who have had little previous exposure to a keyboard can learn to locate most letters, capitalize, return to a new line, use the space bar, and backspace to erase within a 30 minute session. However, an analysis of the revision data (described below) suggests that they still need to devote

considerable attentional resources to coordinating the use of the text editor with the process of producing the text.

Children found the mouse more difficult to learn than the keyboard commands. Only 30% of the third graders even attempted to use it in the initial sessions, and very few could use it without assistance by the final session. More fourth graders attempted to use it, but only a few became skilled enough to use it frequently and without assistance. The major problem children faced was in figuring out where to move the cursor to correct an error. Many of them found it conceptually difficult to position the cursor *ahead* of the character that would then be erased with the backspace key. In addition, some children tried to "drag" the cursor from one point on the screen to another, rather than simply clicking the mouse button.

The number of words produced by children increased across sessons for both grades. Third graders wrote an average of 22 words in the first session, increasing to 40 words by the fourth session. Fourth graders produced 27 words in the first session and increased their output to an average of 73 words by the fourth session. The increase in output over sessions is consistent with the data on editor mastery, and suggests that children were becoming much more comfortable with the keyboard after approximately two hours of individualized practice and instruction.

Although children seemed to have learned the basic commands and appeared to be fairly comfortable at the computers by the third and fourth sessions, the data on their revision activity suggest that a considerably larger time investment may be necessary to produce benefits to children's writing quality. The rate of changes to the text was quite high, in contrast to the results of other research showing that revision by hand is fairly limited. Averaged across the four sessions, third graders made about 32 changes per 100 words written, while fourth graders made about 21 changes per 100

words written. Many of these changes were made to correct errors that were produced because the children were unskilled typists. That is, when children are first learning to write on the computer they may make many errors in entering their text; errors that then need to be corrected with the text editor. Revision rates actually *decreased* across sessions as children became more skilled with the computers. It is possible that anecdotal reports of increased revision activity by children at the computer may simply reflect their unskilled use of the keyboard. For example, many children forgot to insert spaces between words by pressing the space bar. Children often did not look up at the screen in time to notice that they had strung several words together without space separations. They would then have to spend several minutes erasing and retyping the text or trying to insert the spaces using the mouse.

Revisions made by the children were categorized into three broad groups based on the type of text problem being addressed: Space-related repairs (to insert or delete spaces); letter-level repairs (primarily spelling, capitalization and punctuation corrections); and word-level repairs. Reliability was assessed by having a second coder code the protocols of 12 of the 25 children. Overall reliability was 96%. The majority of text changes were categorized as letter-level repairs; 65% of the changes made by third graders and 61% of those made by fourth graders were letter-level changes. Space-related repairs declined across sessions. For third graders, 40% of the changes made in the first session were to solve spatial errors, while 19% of the changes made in the fourth session were space-related revisions. For fourth graders, 30% of the first-session changes were space-related, dropping to 20% by the fourth session. Children made very few changes that affected the meaning of their text. 10% of the changes made by third graders and 14% of those made by fourth graders altered the meaning of their work. These rates remained constant across sessions.

The preliminary data from this project suggest several conclusions: First, although it is

possible that children can benefit from writing on the computer, it is important to keep in mind that a serious investment in time and resources (beyond the initial expense of the equipment) will be required for children to learn the new skills that will be required. Our experiences suggest that at least four sessions of individualized instruction and practice may be required for many elementary school children to even begin to reap some of the potential benefits of learning to use a text editor. In addition, having the computers may well increase the demands on the classroom teacher. He or she must work with the computer tutors to select children to work at the computer at particular times, and must arrange for those children to make up the regular work they had missed. Thus, the potential benefits must be balanced against the investment of resources.

The data reported here are preliminary and limited because they address children's revision activity while they are still mastering the text editor. Thus, the failure to observe an increase in substantive revisions does not imply that children will not begin to make such improvements to their work when they have more experience with the text editor as a writing tool. However, the misleadingly high rate of revision activity may point to a possible drawback of the text editor: When children first learn to write on the computer their lack of skill may actually result in more errors to be corrected, and their misconceptions about particular features of the editor (e.g., the mouse) may detract from the time and attention that they can give to the quality of their writing. It remains to be determined how much experience with the text editor would be necessary for children's writing to improve through an increased ability to evaluate and revise their text.

References

Beal, C. R. (in press.) Repairing the message: Children's monitoring and revision skills. Child Development.

Dauite, C. (1985). Computers and writing. Reading MA: Addison-Wesley.

Graves, D. (1983). Writing: Teachers and children at work. Exeter NH: Heinemann Press.

Levin, J. A., Boruta, M. J., & Vasconcellos, M. T. (1983). Microcomputer based environments for writing: A Writer's Assistant. In A. C. Wilkinson (Ed.), Classroom computers and cognitive science. New York: Academic Press.

Scardamalia, M., & Bereiter, C. (1983). The development of evaluative, diagnostic, and remedial capabilities in children's composing. In M. Martlew (Ed.), Psychology of written language: A developmental and educational perspective. New York: John Wiley and Sons.