The Future of Word Processing in Academic Writing Programs

Introduction

Word processing is becoming recognized as the operational standard in business and other forms of professional writing. It will continue to strengthen its hold in the future—and rightly so, because word processing, like other computer-facilitated efforts, exponentially extends a writer's efficiency and capability. Is there any reason that our students should receive anything less than a state-of-the-art education in writing? Armed with this future-certain communication tool, won't students indeed have the competitive edge?

Word processing will gradually become an important component of academic writing programs because of its ability to save time, conserve labor, stimulate production, encourage revision, and solve problems. Those who teach writing, however, need not fear that hard-won experience will become outdated. Traditional objectives and the body of writing theory will remain intact, but the computer has the potential to revolutionize the production of student manuscripts and allow for more "professional" use of faculty time.

Word Processing and the Writing Process

The heuristic stage of writing is already being applied at a rapid pace: some computer programs ask students key questions which are then answered in sentences. Corresponding to the traditional structural elements in the writing process—thesis statement, controlling idea, and the like—the answers to these friendly queries can be reformatted by the computer into a rough draft. Other programs can construct a outline once phrase-level responses are solicited. In either case, the order of the question sequence is supplied by the heuristic programs to match the logical progression routinely encountered in the writing process.

In addition, outlines will be given renewed importance in the successive stages through which a writer works toward completing a word-processing manuscript. Section headings will be added; then the substance will follow. While moving from section to section within the manuscript may disrupt the linear flow many writers are used to, the word-processing writer may welcome the chance to add thoughts spontaneously elsewhere in the manuscript. Ease of paragraph-section shifting can foster a coherency that might not be readily accessible in a manual recopying mode.

Text Analysis

Text-analysis software can provide students quantifiable feedback in an interactive mode. Programs such as Bell Laboratory's *Writer's Workbench* and IBM's *Epistle* are style-analysis packages which can provide objective measures of certain stylistic choices and limitations of a writer. Deadwood phrases are easily located by the computer. Sentence patterns are quickly quantified: how many adverb clauses, for example, does the writer use? Is the writer able to put them before, after, and in the middle of the main clause? How many different subordinating conjunctions or introductory adverb clauses does the writer use to begin sentences.

While some undoubtedly believe that there is no meaningful relationship between stylistic choices and the more qualitative evidence of "high thought," a significant body of research indicates that the opposite is true. The stylistic analyses of Ellis B. Page in the 1960s, for example, revealed important correlations between "intrinsic" or higher-level thought development and the quantifiable "bag of tools" a writer has available to embody those ideas.

The New Role of Word-Processing Faculty

Faculty in future writing programs will spend less time in the classroom and more time in word-processing "laboratories," where they will field questions, supervise, guide learning, and motivate students who are composing and revising on a screen. The use of graduate assistants will be as plentiful as they currently are in science-laboratory courses. In general, the computer will allow for a stronger implementation of the management-by-objective (MBO) method of structuring learning and teaching. Classroom time will be used more productively to activate discussions and to coordinate the activities and objectives of the course. Be alleviating much, if not all, of the drudgery of jotting endless, repetitive comments on students papers, word processing may revitalize the discipline. Word processing will retain traditional emphasis in teaching composition, but will also give new life to the wealth of established research as it is translated into the new production mode.

For the professor of writing, the distance will close between what's "ideal" and what's feasible in terms of actual time-and-effort constraints. The gap will diminish between what *should* be done and what *can* realistically be accomplished. Is there time to give ample attention both to mechanical and stylistic concerns and the quality of thought development? The computer can facilitate the former with ease. Spelling and punctuation errors, for example, can be identified for the student in the draft stage—to be looked up by the student, not corrected by the computer.

Graphics-Enhanced Text

Visual reinforcement of written ideas is often welcomed by readers. Books and magazines in the marketplace have always taken advantage of new picture-generating technology, but individual writers have been largely limited to the text itself—a throwback to more traditional production modes when adding pictorial enhancements was, at best, awkward.

While technical illustrations—figures, graphs, charts, and other drawings—have always been an important part of technical communication courses, the hand-sketched results, until recently, have been laboriously achieved. Now that CAD/CAM and other forms of computer-aided design have become widespread, the integration of words with pictures is becoming commonplace in writing courses. Slide projectors will begin to accompany more oral reports as speakers get into the habit of making slides directly from the CRT screen. In addition, multi-color plotters will be called upon to produce vivid transparencies and other visual aids. There is every reason to believe that once the technology becomes widely available, writers in freshman composition courses may also discover that visual supports can add an exciting new dimension to their efforts.

Creative Writing

Word processing can also serve the needs of creative-writing programs. Successive stages of composition and revision can be achieved without tedious, manual recopying. Global search-and-replace functions can change a character's name throughout a manuscript. Similarly, commonly used names can be fully inserted on the screen with a keystroke or two, and the formatting of plays will be simplified. Software packages for screenplays are already being widely used by professional scriptwriters.

Authors may choose to construct idea banks of character sketches and landscape descriptions, allowing them to catalogue more spontaneous impressions and other short pieces whose freshness will also reflect an on-the-spot fidelity to experience. In fact, many writers of the past used journal-based idea banks to collect daily thoughts and observations. The American transcendentalists Henry David Thoreau and Ralph Waldo Emerson, for example, made the practice habitual.

Even word-only adventure games such as Infocom's *Zork* series make possible an interactive participation between the student and the various narrative alternatives built into the software. Problem-solving skills are sharpened as players instinctively seek to learn the syntactic and thematic restrictions which the game imposes. Language awareness is heightened as the game responds, for example, with "I don't recognize the verb." Increased computer memory will bring new sophistication to a player's range of responses, further developing his ability to tie together narrative elements in a story.

Writing Across the Curriculum

Once text-analysis and dictionary/thesaurus software becomes more available to individual users, faculty in departments beyond English will be able to give more informed attention to written assignments in their own disciplines. Interactive computing programs will allow students to analyze and synthesize ideas on a variety of subjects, developing them further in successive drafts.

Text-analysis programs can offer an automatic quantification of the student's stylistic range, including the strengths and limitations in his profile as a writer. Faculty in various disciplines can "run" such programs without having to develop the extensive knowledge of writing style otherwise necessary when in a manual production mode.

In addition, a catalogue of boilerplate comments will give the faculty member an ability to return meaningful feedback to each student. The computer can be harnessed to save the time and labor previously required to articulate manual responses to specifics in student writing—most of which tend to reappear in one form or another on the comment page of other student papers.

Plagiarism

A common method of plagiarism in academic writing programs is the transfer of papers from one student to another. Some fraternities, for example, have extensive files of returned papers which have accumulated over the years. Faced with the time-consuming and increasingly legalistic attempt to prove plagiarism, a few professors may be tempted to look the other way when plagiarism is suspected.

Long-range storage on hard disks (or tape) is a solution that many colleges may adopt once word processing becomes more prominent in writing programs. Final drafts of student papers will be routinely routed to hard-disk storage, forming a document library against which suspected papers—or all papers—can be matched by means of a "string search." Scanning its memory, the computer will merely "search" or "locate" a specified string of words in seconds.

Problems Facing Word Processing

Increased computer memory will be necessary to run the many sophisticated programs tomorrow's student will find so challenging. But even with hardware prices continually dropping, a serious financial gap may develop between institutions that can afford the best word-processing equipment and those which can't. Increased dependence on high technology has, historically, widened the gulf between the elite and the rest.

While the new technology will be readily accepted by some faculty members, others may become skeptical if it appears that hard-won, field-tested experience is being swept away by the word processor. Misinformation may continue to thrive until the following condition is met: faculty must be given user-friendly word processors to experiment with in the privacy of their own offices. At that point, word processing will be its own best salesman.

As with processed foods, the word "processed" will continue to carry the connotation that substance has been sacrificed for appearance. While both the pencil and typewriter are examples of high technology in their own right, the manipulative ease of word processing may well call into question many modes of communication now commonly accepted.

Renewal of Literary Studies

Text analysis may also invigorate literary criticism. Dissertations may increasingly quantify stylistic patterns of traditional writers, providing new insights into the writing process itself. Courses on the evolution of style could become prominent, allowing the present to be assessed in terms of the past. The interest-arresting power of color graphics might stimulate new interest in literature as pictures, text, and lessons are merged.

Once the humanities become more subject to computer analysis, increased quantitative objectivity and graphics-driven excitement could reverse the declining prestige of literature, philosophy, and history. High technology may become as central a tool to the humanities tomorrow as it is to the sciences today.

Electronic Mail

Much to the applause of environmentalists, the electronic-mail concept may one day make paper, or "hardcopy," obsolete in writing programs. After finishing drafts on the word processor, students will send electronic copies to their professor's computer. At his convenience, the professor will call up the individual copies, assess them, and send back comments to the students' electronic file. Both "papers" and comments will be permanently available to the student and professor.

If student papers can be entirely electronic, so can library books. The familiar library-research component in most academic writing programs will expand to meet the new ease of information access. Even routine writing tasks can change; students doing research papers won't have to spend time keying-in quoted passages: a block move will transfer the desired amount of text automatically.

The vision of a paperless library coupled with voice-activated word processors seems like a form of neo-primitivism—returning us to the oral-visual tradition once more, and potentially making mankind's flirtation with the printed word little more than a passing fad in history.

[*Ed. Note: Portions of the above were presented at the Western Educational Computing Conference (California Educational Computing Conference): San Francisco, California, November 17-18, 1983.*]

Bibliography Update

Arms, Valarie. "The Computer and the Process of Composition." *Pipeline.* 8:1 (Spring 1983), pp. 16-18.

Bali, Mrinal. "A Writer's Guide to Buying a Word Processor." *The Writer.* 97:4 (April 1984), pp. 5-8.

Bean, John C. "Computerized Word-Processing As an Aid to Revision." *College Composition and Communication.* 34:2 (May 1983), pp. 146-148.

Beechhold, Henry F. "People and Computers: An English Course." *Collegiate Microcomputer.* 1:2 (May 1983), pp. 149-151.

Card, S. K. and T. P. Moran. "Computer Text-Editing: An Information-Processing Analysis of a Routine Cognitive Skill." *Cognitive Psychology.* 12:1 (January 1980), pp. 32-74.

Collins, Allan. "Learning to Read and Write with Personal Computers." *Reading Education Report No. 42.* National Institute of Education. (May 1983), 32pp.

Covey, Preston K., Jr. and Michael G. Southwell. "Using Computers in Teaching Reasoning and Writing." *Collegiate Microcomputer.* 1:2 (May 1983), pp. 141-146.

Cowie, J. R. "Automatic Analysis of Descriptive Texts." *Proceedings of the Conference on Applied Natural Language Processing*. Santa Monica, California: Feb. 1-3, 1983, pp. 117-123.

Daiute, Colette. "Writing, Creativity and Change." *Childhood Education*. 59:4 (March-April 1983), pp. 227-231.

Frase, Lawrence T. "Human Factors and Behavioral Science: The Unix Writer's Workbench: Philosophy." *Bell System Technical Journal*. 62:6 (July-August 1983), pp. 1883-1890.

Geoffrion, Leo D. "The Feasibility of Word Processing for Students with Writing Handicaps." *Journal of Educational Technology Systems*. 11:3 (1982), pp. 239-250.

Gingrich, P. S. "Human Factors and Behavioral Science: The Unix Writer's Workbench Software: Results of a Field Study." *Bell System Technical Journal*. 62:6 (July-August 1983), pp. 1909-1921.

Griffith, D. W. "Word Processing for the Junior High Student with Weak Writing Skills." *AEDS Twenty-First Annual Convention Proceedings: Frontiers in Educational Computing*. Winnipeg, Manitoba, Canada. May 9-13, 1983. pp. 108-111.

Heckathorn, C. W. and D. S. Childress. "An Integrated Computer System for Anticipatory Text Generation and Device Control by Individuals with Severe Motor Impairment." *Proceedings of the IEEE Computer Society Workshop on Computing to Aid the Handicapped*. Charlottesville, Virginia: November 4-5, 1982, pp. 17-23.

Improving Writing in California Schools: Problems and Solutions. Sacramento: California State Dept. of Education, 1983.

Kane, Janet H. "Computers for Composing." Annual Meeting of the American Educational Research Association. Montreal, Canada: April 11-15, 1983. [ED 230978] 20pp.

Langer, Philip. "Instruction and the Feedback Dilemma." Meeting of the Rocky Mountain Psychological Association. Salt Lake City, Utah: April 1983. [ED 230547] 21pp.

Lofgren, Charlotte D. "Computers and College Composition." *CALICO Journal*. 1:1 (June 1983), pp. 47-50.

MacDonald, N. H. "Human Factors and Behavioral Science: The Unix Writer's Workbench: Rationale and Design." *Bell System Technical Journal*. 62:6 (July-August 1983), pp. 1891-1908.

Marcus, Stephen and S. Blau. "Not Seeing Is Believing: Invisible Writing with Computers." *Educational Technology*. 23:4 (April 1983), pp. 12-15.

Norton, L. M. "Automated Analysis of Instructional Text." *Artificial Intelligence*. 20:3 (May 1983), pp. 307-344.

Safdie, Robert. "Software for the Generalist: Software Review of Crosswork Generator." *Collegiate Microcomputer*. 1:2 (May 1983), pp. 165-167.

Schwartz, L. "Teaching Writing in the Age of the Word Processor and Personal Computers." *Educational Technology*. 23:6 (June 1983), pp. 33-35.

Steiner, J. "Text Editing Routines for the Color Computer." *Micro*. 63 (August 1983), pp. 67-70.

Sullivan, M. A. and A. Chapanis. "Human Factoring a Text Editor Manual." *Behavioral and Informational Technology*. 2:2 (April-June 1983), pp. 113-125.

Thimbleby, H. "Guidelines for Manipulative Text Editing." *Behavioral and Informational Technology*. 2:2 (April-June 1983), pp. 127-161.

Winkel, Brian J. "Word Processing for Academia." *Collegiate Microcomputer*. 1:2 (May 1983), pp. 124-128.

Woods, Claire. "From Clay Tablets, Monk Copyist and Dip Pens to..." *English in Australia*. 63 (March 1983), pp. 30-37.

Yannakoudakis, E. J. and D. Fawthrop. "An Intelligent Spelling Error Corrector." *Information Processing and Management*. 19:2 (1983), pp. 101-108.

Grammar and Style Checker for TRS-80

Cornucopia Software is making available its *Grammar and Style Checking* program for use with the Radio Shack TRS-80. This software can edit documents, checking for double negatives, wordy phrases, and common misuses of words. It also analyzes the document, displaying the average length of phrases, sentences, and paragraphs. For more information, contact Cornucopia Software, P.O. Box 5028, Walnut Creek, California 94596.

The Least You Should Know About Word-Processing Software

Leaf through the pages of any computer periodical. You'll soon discover many advertisements extolling the virtures of word-processing software. "Ours will do everything except write the letter for you," they seem to be saying. But which text-editing and formatting features do students in composition, literature, creative writing, and technical communications courses really need to produce finished documents? And how many computerized bells and whistles are you, as a researcher and professional writer, likely ever to use in a manuscript? These questions merit careful consideration, especially since word-processing software often costs hundreds of dollars. (Bells and whistles aren't free, you know!)

The newsletter does regular hands-on evaluations of word processing software to help you discover programs that would be appropriate to your teaching or research needs. Although attempts are made to limit our discussion to those edit and command functions most useful in academic settings, reader uncertainty persists as to which text-editing and formatting capabilities apply to a given application. Responding to our readers' questions, we here provide a catalog of features as they pertain to five categories: composition, literature, creative writing, technical communications, and professional. While by no means exhaustive, these lists do display many of the application-specific capabilities teachers and writers should look for when purchasing word-processing software. [NOTE: the first category—Composition—establishes a minimum standard upon which successive categories are built.]

Composition

Help screens (video tutorials you can retrieve during editing)
Automatic headers (titles), **footers, and page numbers**
Full-screen cursor control (so you can move to any spot on the screen to edit, insert, or delete words)
Automatic word wrap (so you don't have to press the "Return" or "Enter" key at the end of each typed line)
Adjustable left and right margins (for indenting long, single-spaced quotations)
Automatic text adjusting after inserting/deleting text
Single and double spacing
View text on the screen before printing it (saves time and supplies)
Search for and/or replace words

Literature

Superscripting (for any effort requiring footnotes)

Creative Writing

Half spacing of lines (.5 inches to 3 inches)
Proportional spacing (words look "typeset," as in a book or magazine)
Right-justified text (for margins without a ragged edge)

Technical Communications

Subscripting (for formulas such as H_2O)
Graphics (for charts, diagrams, etc.)

Professional

Create personalized HELP screens (great for grammar and rhetoric tutorials; saves students' thumbing through books while at the terminal)
Boilerplating (creating libraries of frequently used sentences, paragraphs, etc.)
Background printing (so you can work on another project while printing a different one.)

SOFTWARE REVIEW - *EasyWriter II System*

This month, we will evaluate Information Unlimited Software's *EasyWriter II System*, a word-processing package that includes a spelling checker (EasySpeller) and a mass-mailing program (EasyMailer). [*NOTE: This software is not to be confused with* EasyWriter 1.1, *which is currently being marketed by IBM*].

Our aim is not to endorse any product. Rather, we will list the software's strengths and weaknesses and will point out how these might affect students and teachers in a writing-laboratory environment.

PROGRAM:	*EasyWriter II System*
PUBLISHER:	Information Unlimited Software, Inc.
ADDRESS:	2401 Marinship Way, Sausalito, CA 94965
LIST PRICE:	$395.00
WILL RUN ON:	IBM-PC (and XT), COMPAQ, TI Professional
COMPUTER MEMORY:	64k or 128k
DISK DRIVE NEEDED:	two
SPELLING DICTIONARY:	yes (88,000 words)
CORRECTION METHOD:	marks words for later correction by user
COMPUTER TUTORIAL:	yes (very thorough)
MANUAL QUALITY:	excellent (many illustrated examples)

COMPOSITION

FEATURES	YES-NO	COMMENTS
Help screens (video tutorials you can call upon during editing)	yes	brief explanations: may require looking for more specifics in the manual
Automatic headers (titles), footers, and page numbers	yes	
Full-screen cursor control (you are able to go to any spot on the screen to edit)	yes	
Automatic word wrap (you don't have to depress the "Return" or "Enter" key at the end of each line)	yes	
Adjustable left and right margin settings (i.e., for indenting extended single-spaced quotations)	yes	some programs force you to compose documents in a pre-specified format; the *EasyWriter II System* does not

Single and double spacing	yes	
Automatic text adjusting after making editorial changes (insert/delete)	no	you must reformat your text by depressing function key F8 (on the IBM-PC) after you make editorial changes (you can also direct the computer to do this for you before printing a document, but you lose all of your paragraph indents in the process—not good!)
View your document on the screen before printing (saves time and supplies)	no	the *EasyWriter II System* allows you to specify the page size and format before you enter text, and it displays your words in the format you have chosen (except for double spacing) so, in this case, the lack of this feature isn't a disadvantage.
Search for and/or replace words	yes	you can both search for and replace words, phrases, or sentences not exceeding 50 characters in length
Move blocks of text from one part of a document to another (cut/paste)	yes	instead of retyping a page, this feature allows you to move text from one location to another in your document

LITERATURE

Superscripting (...the end"[12])	yes	for research documents that require footnote or endnote references

CREATIVE WRITING

Ability to space lines in less than full steps (quarter- and half-line spacing options)	yes	important where document cosmetics are a concern, as in the case of concrete poetry and other styles
Proportional spacing	yes	gives documents a finished, phototypeset appearance (as in most textbooks)
Right-justified text (flush-right margin)	yes	alleviates a "ragged" right margin (the standard typewriter format)

TECHNICAL COMMUNICATIONS

Subscripting (H_2O)	yes	for documents requiring formulas to be included
Graphics	no	enables you to create flowcharts; line, bar, and pie graphs; schematics; and other technical drawings (the publisher has told us that this capability will be included in the next release of the *EasyWriter II System*, scheduled for this summer)

PROFESSIONAL

Create your own "HELP" screens	no	allows you to design grammar, rhetoric, and style tutorials that students may retrieve while composing or editing text, alleviating much of the need for students to page through textbooks
Boilerplating (library files)	yes	allows you to create disk libraries of research data, personalized comments, and other text which is then available for future reference or for insertion into a new document
Background printing (print spooler or buffer)	yes	allows you to begin another project while your most recent one is being printed

OTHER FEATURES

The professionals at Information Unlimited Software rate an A+ in the category of technical support. If you have any questions, they are quick with answers that, more often than not, will solve your problem immediately. If some research is required, they do it and call you back.

The EasySpeller program included with the *EasyWriter II System* does not automatically correct your student's spelling. Rather, it notes that a word fails to match one in its dictionary and allows the student to mark the questionable word for correction at a later time. EasySpeller's one weakness is that it does not allow you to add words to its dictionary (you can do this with many other spelling check programs currently on the market). Thus, words of a more specialized nature—including technical terms, variant spellings, and so forth—will be flagged as errors if they are not already resident in EasySpeller's dictionary.

OVERALL EVALUATION

Because of the *EasyWriter II System*'s ease of use and excellent documentation, high school students will find the program simple to learn. Its text editing and formatting power makes it valuable for collegiate writers, too, and the eventual addition of a graphics capability will strengthen the software's interdisciplinary applications. If the *EasyWriter II System* displayed visible (on-screen), double-spaced text, the program would be hard to beat (we've already spoken to the people at Information Unlimited Software about including this feature, and they seemed receptive to our suggestion).

[ED. NOTE: The categories we include in our software reviews reflect course offerings in traditional academic settings. If you feel we should add other categories that address your particular writing initiatives, or if you would like to see more program features included under existing categories, let us know.]

Manuscript Submissions Welcome

The newsletter welcomes from our readers article submissions which pertain to the applications of word processing in academic writing programs. Manuscripts should be OCR readable (Courier, Letter Gothic, or similar letter-quality typefaces) and should include a short autobiographical sketch (direct uploading of articles via modem will be enabled soon). The Editors reserve the right to edit articles, if necessary. If you want your manuscript returned, please enclose a stamped, self-addressed envelope with your submission. Address all correspondence to the Editors, *Research in Word Processing Newsletter*, Liberal Arts Department, South Dakota School of Mines and Technology, Rapid City, SD 57701-3995.