
WORD PROCESSING : ITS SPECIAL POTENTIAL FOR NON-NATIVE WRITERS

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Abstract

The potential of word processing for non-native student writers is explored through an examination of effects describing the categories of writing process, quantity and quality of writing, planning and prewriting, revising, conception of composing, cognitive processing, setting effects, and attitudes.

It is maintained that non-native writers may benefit in significant ways from the attributes of word processing and the conditions surrounding its use in composition instruction.

Introduction

As (1) a communicational environment, (2) an instrument for translating ideas into words, and (3) a tool for organizing text and for producing a polished finished product, word processing offers new resources for composing in a first or second language. Within the context of computer use in education, these new resources are defining new types of literacy events (Heath, 1982), which represent new communicational experiences and opportunities for learning. The insights to be gained from investigating the literacy events which are evolving in the environment of the computer and which are changing the way that people write, discuss, learn, and organize ideas will be of value both to educators wishing to exploit the capabilities of the computer in composition instruction as well as to researchers and theoreticians seeking to understand the composing process.

This paper explores the potential of word processing for ESL (English as a second or foreign language) student writers. The potential of word processing for ESL writers is examined in terms of eight broad areas of effects described in the published word processing literature:

- Writing process
- Quantity and quality of writing
- Planning and prewriting
- Revising
- Conception of writing
- Cognitive processing
- Setting effects
- Attitudes

Writing Process

In order to achieve success in English composition, a non-native writer must develop not only a base of knowledge about English and its rhetorical conventions, but also a set of

procedures for applying that knowledge while composing (Pennington, 1991a, Stein, 1986). While word processing cannot assist the non-native writer in achieving the goal of developing a linguistic and rhetorical knowledge base, it does provide a medium for generating, elaborating, and revising ideas and their realizations in language. Moreover, as a tool that "[automates] some of the more burdensome aspects of text production and revision" (Kozma, 1991, p. 35), the word processor may free up some of the novice writer's time and attention, making it easier to concentrate on the non-mechanical aspects of writing. In its capacities as both facilitory tool and medium for writing, the word processor may help the language learner more than pen and paper to automatize composing routines and thought patterns connected with the writing process.

Word processing may in fact promote a different kind of writing process or approach than writing by ordinary pen-and-paper means (Kellogg & Mueller, 1989; Williamson & Pence, 1989). "Most [computer-using students] stated that the computer caused them to change the way they planned, organized, wrote, revised, and edited their papers" (Bernhardt, Edwards, & Wojahn, 1989 p. 123). The writers observed by Bridwell-Bowles, Johnson, and Breeh (1987) differed greatly in the specific type of writing process they employed, but in every case their approach was more spontaneous, fluent, and less structured when writing on computer than when writing by hand. For ESL writers, who are apt to suffer from language problems and writing apprehension (Phinney, 1991), and who, like other basic writers, often have learned to write in a highly structured and non-spontaneous manner, the word processor may help to free them to experiment with different approaches to composing.

Quantity and Quality of Writing

The computer encourages student writers to write for longer periods than they would when writing by hand (Nichols, 1986; Womble,

1984). By maintaining their text in a "fluid" condition for a relatively long period of time (Catano, 1985), "writers keep their writing tentative and exploratory" (Cochran-Smith, 1991 : 111), thus increasing (1) the likelihood of experimentation and (2) the time available for ideas to germinate and for content to be developed. If we assume, as most in composition pedagogy assume, that students who write more will ultimately write better, then the increases in writing time and quantity reported in many computer studies (e.g., many of those reviewed by Hawisher, 1989, as well as the recent investigations of Brady, 1990; Etchison, 1989; Friedlander & Markel, 1990; Williamson & Pence, 1989) can be expected to lead eventually to improved quality of writing. Only a few studies (e.g., Cirello, 1986; Dalton & Hannafin, 1987; Pivarnik, 1985; and Williamson & Pence, 1989) report superior quality writing, as judged by holistic assessments, for computer-using students. The studies reporting improvements in writing quality as an effect of word processing were generally longer in the period of the research than the typical investigation of word processing. A significant reason for the lack of positive effect on writing quality in many word processing studies may therefore be the relatively short timespan of the research (Pennington, 1991a).

A study by Friedlander and Markel (1990) suggests a possible link between writing more and writing better. While those who compose on computer in their investigation did not receive higher holistic ratings of the quality of their writing, they did receive higher ratings for content, in the sense that they "were able to produce descriptions that were more complete and covered more of the necessary facts than they were in papers written by hand" (Friedlander & Markel, 1990, p. 74). Perhaps in making it easier or more enjoyable to write about a topic at length, word processing encourages writers to put more information into a written piece and to develop the content of their papers more fully than they would without the computer. An

increase in the amount of information and "discourse-depth" in successive composition drafts of ESL students working on a word processor, as reported in Pennington and Brock (1991), may represent a related finding.

Planning and Prewriting

Planning is an advanced writing skill (Bereiter & Scardamalia, 1987) related to knowledge of scripts and schemata in reading. It is generally thought that writers who explicitly plan or outline before writing produce better texts than those who do not (Hass, 1989; Kellogg, 1984) and that expert writers work from more elaborate plans, including more hierarchical arrangement of goals and subgoals, than do novices (Hayes & Flower, 1986). However, writing on computer may change the way that writers begin their task, encouraging a type of process in which preplanning is minimized. In a 10-week comparative study of the writing of ESL university students conducted by Chadwick and Bruce (1989), "there was a move towards a more flexible approach by the [computer-using] group, in the sense that they now had ease of revision in mind before they started writing" (p. 11). In contrast, a pen-and-paper comparison group, perhaps anticipating the time-consuming and burdensome non-productive work of revising manually, spent more time thinking and planning before writing than did the computer users. Similar findings emerge from other research (Bridwell-Bowles, Johnson, & Brehe, 1987; Haas & Hayes, 1986; Lutz, 1987) comparing the writing process of individuals who composed papers both in pen-and-paper and computer conditions.

Haas (1989) has pinpointed some differences in planning by writers using word processing as compared to pen-and-paper means. Haas found that word processing subjects (1) did less planning before writing and (2) exhibited more local, sequential planning and less higher-level, conceptual planning than subjects using pen and paper. This lack of planning overall and of higher-level planning

in favor of local planning does not necessarily equate to a poorer writing process or product. As Haas (1989) conjectures:

Possible writers "make up for" repressed planning with word processing in other ways. In a pilot study, we found that while writers planned less in word processing conditions, they reread their texts more extensively than they did in the pen and paper condition.... Further research should explore not only reasons for less planning with word processing, but also the impact of this decreased planning. (pp. 201-202)

Bernhardt, Edwards, and Wojahn (1989) found that while the first drafts of their word processing subjects were judged to be of lower quality than those of subjects writing with pen and paper, the revised papers of the former group were judged to be of somewhat higher quality than those of the latter group. Bernhardt, Edwards, and Wojahn (1989) speculate: "Perhaps becoming familiar with the machine's usefulness as a revising tool encouraged students to write quick first drafts, which they knew they could revise later" (p. 125). It is possible that the word processing subjects had adopted a new approach to writing, one in which the effort involved in formulating an elaborated plan at an initial stage was replaced by cognitive effort at a later stage directed, towards further development and revision of material generated in a "quick-write" phase. This way of attacking the composing process would seem to have particular value for ESL student writers, who may have any or all of the following traits:

- they lack the experience as readers and as writers in English needed for elaborate planning;
- they suffer from "rewriting apprehension" (Chadwick & Bruce, 1989, p. 18) or other forms of psychological blocking (Phinney, 1991) in their initial attempts to begin a writing task;
- they employ a cautious, word-by-word composing strategy.

Revising

Many authors mention differences in revision behavior as an effect of word processing. Chadwick and Bruce (1989) suggest that "the [pen-and-paper] method tends to encourage an 'all-or-nothing' approach to revision.... [focusing] not so much on what should be changed but rather on what could be retained" (p. 15). In contrast, "[their computer-using] group seemed rather more willing to intervene in their texts" (Chadwick & Bruce, 1989, p. 16), revising more both in terms of number of revising episodes and number of changes made to texts per episode. Chadwick and Bruce (1989) also found some differences in types of revisions made in their pen-and-paper and computer-using groups of non-native writers. According to Phinney (1989 : 85), "There are significant differences between revising with a hard copy and revising on-line which may push the writer toward one type of revision [rather than another]".

It seems plausible that the special properties of the computer might encourage different revision strategies, including both the type and the order of activities, than those promoted by the use of traditional writing media. Indeed, the constraints of composing on paper pressure the student to shortcut the writing process, thereby (1) restricting creative development and revision by not allowing for continuous modification of ideas and (2) limiting the detail-oriented work that is required to achieve the closest possible match between the writer's words and intention. By eliminating many of the constraints of pen-and-paper composing, word processing gives ESL students greater control over their writing.

Conception of Writing

Word processing may engender a whole new view of written communication and the writing enterprise in student writers. Word processing fosters a conceptualization of writing that is more abstract and less tied to individual

writing products than one which originates in the constraints and values of writing by means of traditional implements. In the context of word processing:

The text is as permanent or transient as the writer wishes to make it with the touch of a command key. The students' concept of a first draft is therefore likely to change, since [they] can now produce several printouts and revise each one before arriving at a relatively satisfactory result.... [T]he computer, despite its apparent complexity, is in many ways a more **natural** writing instrument than pen-and-paper. (p. 18)

Word processing can help ESL students to move beyond the textbound, production-based conception of writing that limits basic and novice writers and towards the more abstract, meaning-based conception of the expert writer, whose view of composing centers more on writing activity than on written products.

Cognitive Processing

Several authors have speculated about possible differences in cognitive processing engendered by computer-based writing. Salomon, Perkins, and Globerson (1991) make some general observations about the potential of computer-based tools to affect cognition :

They potentially allow a learner to function at a level that transcends the limitations of his or her cognitive system. Indeed, it can be argued that work with specific computer tools might accomplish more than just enabling the beginner to do the same thing faster and with less effort: These tools might redefine and restructure the learning or performance task... The performance of such a partnership between a human and technology could be far more "intelligent" than the performance of the human alone. (p. 4)

The computer offers the user additional resources of information storage and retrieval to supplement the limited capacity of the human memory to retain and manipulate information in the relatively short-term and new ways of realizing ideas in written form through word processing and its associated functions and peripherals. With the aid of its auxiliary memory and special manipulative features, writers may develop new insights not possible outside the computer-aided writing environment. As Perkins (1985 : 12) maintains this perspective:

By reducing onerous mechanics, the new symbolic technologies may free us to attend in new ways and aspire to new levels of cognition. One might put it this way: The written word extended the reach of thought by helping us to circumvent low level limitations of human short-term memory. Information-processing technologies might further extend the reach of thought by helping us to circumvent the low-level limitations of human computational ability, including not only computation with numbers but with words and images.

This auxiliary storage function may be of special importance for non-native writers, who must manage a greater cognitive load in communication than is required when communicating in one's native language. Non-native writers are therefore generally less able than those writing in their native language to hold many types of information in mind and to manipulate this information into a coherent text. Because of short-term memory limitations and lack of experience in the second language, they may be less able than native writers to call up ready-made schemata into which they can fit pieces of information to make paragraphs or longer discourse units. Word processing may assist ESL writers by offering them a means of developing an organizational schema for a paper independently of the information needed to instantiate it.

Setting Effects

Use of word processing may encourage a different type of classroom arrangement and teaching-learning dynamic in the language classroom than use of traditional writing media. In their research on word processing in the early grades, Cochran-Smith, Paris, and Kahn (1991) observed profound changes in the contexts of instruction under the influence of word processing:

Teachers initially interpreted the tool of word processing in ways that supported their goals for their students' language and literacy development. The teachers shaped the tool to fit their ongoing instructional programs..... Over time, however, the tool also shaped the teachers--eventually they restructured some of the social processes of their classrooms and developed some new ways for seeing and thinking about children as writers. These changes gave children opportunities to learn to write that were qualitatively different from those previously available. (Cochran - Smith, Paris & Kahn, 1991 : 7).

As illustrated in this research with children, new interactional environments and learning opportunities can be made available to students in the settings of use of word processing.

Approaches to writing and to the organization of writing instruction that are engendered or facilitated by word processing can be of particular value for non-native writers. Also, the settings of computer use may adapt themselves well to the needs of ESL students or may open up new ways of fostering the goals of communicative language teaching. For example, it is very unlikely that all students in an ESL composition class will have achieved the same level of writing development in their first language, and as a result, a group of ESL students generally represents a wide array of writing levels and problems. Since their writing experience and problems tend to be so varied,

individualization of work in a computer writing lab set-up, with the teacher acting as tutor, may be an excellent arrangement for training the skills of non-native student writers. Moreover, the lab setting of many computer-assisted writing programs promotes the positive effects of increased individual attention and increased class time spent writing (Bernhardt, Wojahn, & Edwards, 1990; Williamson & Pence, 1989). The further possibility of networking on computer with other students as audience for their ideas and respondents to their writing adds an important new dimension for participation and communication (Eldred, 1989; Hartman et al., 1991; Levin, Riel, Rowe, & Boruta, 1985; Thrush & Hardisty, 1989) that can enhance communicative language teaching in the second language classroom.

Attitudes

To date, computer-assisted writing has generally met with positive acceptance by teachers and students alike:

The greatest effect of computer-assisted composition appears to be the change of attitudes towards writing. Almost every study has reported that students enjoy using a computer to write and that they feel a sense of mastery and accomplishment in learning to use the software. (Phinney, 1989 : 85)

Attitudinal benefits are important and can ultimately affect academic achievement:

If the computer makes writing a less onerous, more satisfying experience for many students, there is at least the possibility that improvement in writing may follow. Positive attitudes generally lead to positive results. (Teichman & Poris, 1989 : 100)

Positive attitudes towards writing on computer may have a far-reaching social impact in the composition classroom:

These positive attitudes toward computer composing...tend to contribute to a spirit of cooperation rather than competitiveness with a classroom. This resulting change in social interactions among students and instructors might be capable of creating an improved classroom culture....(Hawisher, 1989 : 64)

Such attitudinal effects may be especially salient where ESL writers are concerned, as they can help to counteract any negative attitudes that they may harbor towards writing and towards English.

Conclusion

It is becoming apparent that the computer has the capacity to influence the way in which users learn, their mental processes, and their oral and written communication (Brady, 1990). Writing on computer opens up new possibilities for cognitive and academic growth, as the boundaries between thinking and writing, and between prewriting, writing, and rewriting, become more fluid, and as word processing itself becomes a vehicle for learning (Cochran-Smith, 1991 : 108). Word processing offers new windows on and new vehicles for composing that may alter the student's conception of writing and writing process, thereby assisting novice writers to progress towards expert performance. It also promotes certain kinds of classroom organization and interaction between teachers and students that may have salutary effects on writing, on learning, and on teaching, as a new classroom culture enriched by new types of literacy events evolves to support and develop the potentials of the new pedagogical instrument.

The potentials of word processing to produce positive effects in students' writing and the type of participatory, process-oriented classroom culture that it engenders and facilitates are strong arguments in favor of the computer medium for the modern process-oriented writing curriculum. The variety of new

potentials and experiences made available to writers by means of word processing also argues for its application in the learner-centered curriculum, as individual student writers can take advantage of different modes for accessing, developing, and communicating information. The attributes of word processing are, moreover, of particular relevance for non-native student writers, who, because of their limited language, can especially benefit from the computer as a motivating educational medium, an environment for communication, an aid to thinking, a stimulus to writing, a superior writing tool, and

an external aid to memory.

For these reasons, those designing ESL writing instruction should give careful consideration to word processing, as this computer medium offers many positive potentials for non-native writers whose English is less than fully proficient. As a new communicative vehicle and pedagogical instrument, word processing should also be given careful consideration by those seeking to understand the kinds of processes--involving learning, cognition, and language--that occur in writing classrooms and that facilitate composing in a second language.

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