TIME AND DESIGN CONSTRAINTS OF DEVELOPING MULTI-BRANCHING LANGUAGE INSTRUCTION

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Robert Taylor (1980, p. 3) describes the "computer as tutor" as follows:

> To function as a **tutor** in some subject (such as language instruction), the computer must be programmed by "experts" in programming and in that subject. The student is then tutored by the computer executing the program(s).... With appropriately well designed software, the computer tutor can easily and swiftly tailor its presentation to accommodate a wide range of student differences.

How do we ensure the development of "appropriately well-designed software" for language instruction? One continually hears statements that indicate that software designers are not always adequately addressing this question (e.g. "the software doesn't cover what I need to cover"; "the program isn't factually correct"; "the range of material covered is too narrow"; "it is inappropriate for my students"). In general, such software deficiencies

tend to fall into two primary categories. The first category consists of deficiencies that are technological or functional in nature, that is, deficiencies or defects associated with the operation of the software as well as the extent to which programs utilize the potential contained in the hardware. The second category includes deficiencies of a pedagogical nature. In this category we place concerns about learning theory, diagnostic and individualizing components, and the congruence of subject matter, mode of delivery, and developmental level of the students (Helm 1984, p. 10).

Many of these deficiencies stem from some common misconceptions held by novice software developers. One is that creating software is a relatively simple process: all you need to do is sit down, write out a few ideas, and begin programming. Others tend to bite off more than they can chew. Most new software developers tend to underestimate the time and effort involved in creating just one hour of instruction and thus do not fully utilize the potential of computer-aided instruction (CAI). The purpose of this paper will, therefore, be to examine the development of CAI, to explore what is involved in creating software for language learning, and to make some suggestions for software development.

One of the major selling points of CAI is that it is individualized instruction. Suppes states that one benefit of using computers for instruction is "the sense of individualization that can be achieved by computer-assisted instruction, both in terms of actual rate of progress of the student and also in terms of the convenience of time and place for the student" (cited in Taylor, 1980, p. 19); however, just how individualized is current CAI? In the past twenty years researchers have identified three dimensions of learning styles or "preferences." These styles include cognitive style, information processing habits representing the learner's typical mode of perceiving, thinking, problem solving, and remembering (Messick, 1976); affective style, the learner's typical mode of arousing, directing, and sustaining behavior; and physiological style, biological based modes of response that are founded on gender-related differences, personal nutrition and health, and accustomed reaction to the physical environment (Keefe, 1979).

And yet, that is exactly what **ESL Picture Grammar** requires of the student. Aside from the question of tedium, there is the basic question of methodological atrophy. There are also decided problems with the scope of vocabulary purveyed in the lessons. The student is expected to work through twenty-four lessons (and possibly forty-eight lessons, if the tests for each are accessed) using only eighteen nouns and pronouns, fourteen verbs, one coordinating conjunction, and two articles. A larger pool of lexical items should have been constructed so that the student would be acquiring novel vocabulary in each lesson. Since so few vocabulary items are used, the student is asked to create sentences which are both contrived, and at times nonsensical. For example, the student is asked to create sentences such as "The teachers kicked the book," "Won't the teachers be kicking the book?" "Was Sue not seeing the chair?" The restricted range of vocabulary and use of a verb-parsing paradigm are basic flaws of this program. The software is of little value and may even be damaging when viewed by CAI skeptics who would vociferously call for a halt to wasting students' time working on such computer-based lessons. I concur heartily.

Reviewed by **Patricia Dunkel**
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BOOK REVIEWS

Writing and Computers
Colette Daiute. Reading, MA: Addison-Wesley, 1985, Pp 346, viii.

Colette Daiute is a psycholinguist whose past articles have succinctly integrated a process-based approach to writing with characterizations of how computers can facilitate that process. Accordingly, her book is an expansion on prior themes. I found the book worthwhile for the wealth of information it brought to bear on a philosophy of writing very near my own, whereas inconsistencies in organization and the large amount of explanation sometimes obscured, even as it attempted to clarify, information that I may want to retrieve later.

Unlike most other books available from educational publishing houses, this one is airy and catchy. Its striking cover invites a quick browse, whereupon one is struck by the many photographs of kids enjoying themselves writing. One also sees from topic headings that there will be discussions of the writing process, computer tools useful at the various stages of that process, the appeal of these tools to writers in five age groups ranging from children to adults, and the environments conducive to the use of computers in facilitating writing. In addition, the book contains a glossary of computer terms and a comprehensive resource guide.

The scope of the book is broad. It was obviously difficult for Daiute to assimilate so much information, so items pertaining to more than one category occasionally receive mention in more than one place. By the same token, in her efforts to touch on every conceivable aspect of the interface between computers and writers, some topics inevitably receive only cursory treatment.

Daiute knows her subject thoroughly and is able to share her experiences with a wide range of writing systems, including word processors, database managers, writing analyzers, and collaborative word processors. Indeed, the resource guide at the back of the book profiles dozens of such packages and systems. I found ideas stemming from the author's first-hand knowledge to be one of the most useful aspects of this book.

Conversely, it was disappointing that Daiute, with her enviable command of research relevant to her topics, so frequently avoids precise references, preferring phrases such as, "Research has shown...," or "Our studies indicate...," to proper citations and footnotes. Using the bibliography, it is often possible to discern what published work the author is referring to, but sometimes it is not, and, worse, it is occasionally difficult to assess whether the author is summarizing results or speculating. This stylistic feature enhances readability or possibly avoids overwhelming "educators," for whom the mere mention of computers, let alone research, is reputed to provoke drowsiness and a desire to be somewhere else. So, the book attempts to be informative without being snobbishly scholarly; however, the scholar squirms when reading these inexact references, and one familiar with some of Daiute's other work suspects that pressure from an editor might have been a consideration.

Despite this drawback, the book presents a comprehensive assessment of what we know about using computers to help people with their writing.

In this connection, the book reveals some surprises. For example, Daiute found that even after using computers for six months, eleven- and twelve-year olds could write faster by hand than with the computer, and holistic ratings were found to be higher and revisions more meaningful when writing was done by hand (pp. 32, 172). Daiute mentions that "recopying (by hand) may have value" not obtained on computers. "Students rewrite and reformulate texts more extensively when they recopy with a pen or typewriter. With the computer, they make small changes, but with the pen, they tend to elaborate and add" (p. 39). Elsewhere, it is noted that "Simply having the capacity to rearrange texts easily has not greatly increased students' willingness to revise" (p. 123); furthermore, "writing on the computer tends to be sloppier than writing done with traditional tools" (p. 113). "The experimental research to date has not ... confirmed the observation that pre-adolescents write more when they work on the computer or that the quality of their writing is better" (p. 169-170).

These "surprises" are mentioned because their inclusion is indicative of the impartiality with which Daiute presents her case for the many ways the computer **can** help students in their writing. Her underlying message is that computers, whether or not it has been proven beyond question, are effective because they are "fun" and because people, children in particular, "like" to use them. In addition, they greatly facilitate the communal aspects of writing and focus instruction on the student. Most importantly, various aspects of the writing process can be done more easily and integrated more fully using computers; however, despite the fact that, as Daiute points out, computers help **her** to write, she is careful to say that "computers should be used in conjunction with the more plentiful tools: pencils, paper, and dictionaries" (p. 18); she adds that computers could be used "to make points about writing and to encourage the continued use of other tools" (p. 9).

Overall, this book is well written, highly informative, and pleasurable to read. It is a definitive resource which should be on the bookshelf of anyone who is serious about using computers in a situation where writing is being learned.

Reviewed by **Vance Stevens**
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On Line: English for Computer Science

Roberta Lavine & Sharon Fechter. New York: McGraw-Hill, 1986, Pp. 182.

More ESL/EFL teachers and linguists are currently talking about courses designed around a specific content area, both to increase interest and to give students essential vocabulary to meet their future career needs. The most common vocabulary terms used to fulfill such goals are computer vocabulary which has become an intricate part of most university programs. To meet these needs, there have been a number of books published recently about computers in the ESL classroom. Lavine and Fechter's text has been designed for students who wish to acquire a general knowledge about computers. It has four units and twelve chapters, which have been written for the high-intermediate or advanced English language learner. Each chapter is based on a reading passage which introduces vocabulary in context and which has no word lists. Computer terms are well presented, so even if the students or the instructors have no previous experience with computers, they will not encounter any problems in understanding the text.

Each reading passage is usually followed by several exercises, e.g. word study, vocabulary in context, comprehension checks, skill enhancement and enrichment activities. Word study gives the students clues which will help them understand the word in future contexts. Vocabulary in context asks the students to find the meaning of the word in context. The pedagogical forms of this exercise usually vary and consist of multiple choice questions, cloze and definition writing, synonyms or the description of a word. Comprehension exercises are divided into two parts: true-false and multiple choice. In my classes, this kind of questioning has always been the most productive since it does not require the students to memorize details. Instead the students are required only to produce passive answers thus freeing them to aim for maximum comprehension without worrying about minor details. If the students answer incorrectly, this leads into constructive dialog on why the answer is not correct or why the other answer is the better choice. Skill enhancement deals with all of the activities involved in productive reading. It reviews such concepts as main idea, parallelism, restatement, inference and other related reading practices. This is followed by enrichment activities, which are at the end of every chapter and suggest oral and written activities which will force the stu-