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READING AND COMPUTERS: *HANGMAN* AND CLOZE

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In the foreword to her recent work on research in computer-assisted language learning, Dunkel (1991:xiv) cautions that software tends to be created on the basis of what developers imagine will be done by students using their programs, whereas classroom research might yield contrary results. An obvious example of this problem is "clever" feedback on wrong answers which encourages students to make mistakes deliberately.

Although many of the more obvious disparities between developer intuition and learner (mis)use have been worked out in the past quarter-century of CALL development, a major problem in the field remains the fact that unsubstantiated claims for CALL courseware are commonly, if innocently or unwittingly, made. This paper examines one aspect of this problem, the notion that the computer's capability of providing students with text in various configurations will lead them to read.

Reading and Computers

How, or even whether, computers help students to read is by no means agreed (see Kleinmann, 1987, for a brief review of the literature relevant to ESL). As with so many cases in CALL, much depends on the kind of program. Kleinmann, for example, derides commercial reading-skills programs for being "drill-practice and tutorial in nature, amounting to little more than electronic textbooks" (p. 271) that ignore higher-order comprehension skills and fail to stimulate the "general learning strategies that have been correlated with successful language learning" (p. 272). He implies that these failings could be rectified if such programs met the criterion of comprehensible input.

Wyatt too (1989) finds that despite the great potential of the medium, "almost none of the existing CALL courseware for second and foreign language reading skills has moved beyond the stage of directly paralleling the activities found in printed books" (p. 64). Wyatt discusses some of the higher-order reading skills appropriate to CALL and goes on to suggest reading activities which are unique to CALL implementations, such as annotation (e.g., hypertext), modeling, creative reading, and adventure reading. Still, one must be careful to specify more than these broad genres in referring to software that helps learners in reading a second or foreign language. Wyatt, for example, notes that the typical commercial adventure program is "unsuitable for pedagogical purposes for various reasons, such as the esoteric nature of much of its vocabulary" (p. 74).

In support of his criticism, I once had the opportunity to monitor ESL students working text-intensive move-based simulations on PLATO at the University of Hawaii. Unaware that anyone on the network could see their screens, the players consistently sped from one screen to another so fast that it was possible to read only a word or two. Whatever strategies were being used to play the game, they had little to do with reading. On the other hand, my Swedish neighbor is amazed and delighted that his 11-year-old son will sit for hours playing a rather sophisticated swashbuckling computer-based adventure game, not only interacting with the game in English, but reading an accompanying book-length text in English.

Some programs do exist that break from the textbook-emulation mode and so (it would seem intuitively) must help students with their reading. For example, *SPEED READER II* and *HOPALONG* both guide eye movements over chunks of text in an effort to promote helpful reading strategies. Also, the public domain program, *CALIS-based Reading Comprehension Exercises*, responds to wrong answers to comprehension questions by highlighting areas in the text which will assist students in discovering the correct answers. Such programs suggest that computers can have a productive role in reading.

However, the major disadvantage to programs promoting higher reading skills in this way is the amount of work that goes into preparing the feedback in comparison to the actual student interaction time.

If one advantage of using computers to teach reading is their ability to expose students to great quantities of text, then a less labor-intensive means is needed to deliver this text in such a way that students will read it willingly.

At first glance, text manipulation software appears to meet this need. It can deliver text in quantity through templates requiring students to restore or manipulate the material. I have argued elsewhere that text manipulation is capable of cognitively engaging students by stimulating powers of induction (Stevens, 1990a). It is assumed that students presented with text in this way must read it. But do they? Or are we in danger of falling into the trap mentioned by Dunkel: do we merely intuit that students are reading during text manipulation when they are actually doing less of that and more of something else?

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Encrypted text is a popular type of manipulation program that one would assume promotes reading. *Cryptogram* (in *Text Tanglers*) changes all letters in a few lines of text to randomly chosen but systematic alternates. For example, all *a*'s become *d*'s, all *b*'s become *x*'s, etc. Schcolnik (1986) suggests a simple encryption using the search-and-replace function in word processed files. The students' task is then to restore the text by searching-and-replacing the encrypted letters correctly.

In restoring the letters, students are assumed to be employing reading skills, such as using clues elsewhere in the text to reduce the range of possibilities for the letter or word they are decoding. The task is authentic because degraded text appears frequently in real-life, as when one attempts to read a partially rusted-over road sign (McClelland, Rumelhart, & Hinton, 1986, postulate a parallel distributive processing model of cognition to explain how the road sign might be deciphered).

However, one teaching technique I have used with *Cryptogram* is to leave encrypted instructions for students to follow—instructions which become visible once the puzzle has been solved. Experience shows that students can successfully solve the puzzles without realizing that any message had been left. Thus, whatever the processes involved, they are not necessarily always correspondent with reading.

Hangman and Cloze

In order to learn more about the processes involved when students use text manipulation, research has been carried out at Sultan Qaboos University (Oman) to examine student interaction with two varieties of such programs: *Hangman* and cloze. The results have shed light on levels of cognition and (in the case of the cloze study) on the degree of reading taking place.

The studies were carried out non-intrusively; that is, the software was configured so as to record student keypresses without students, or in many cases even their teachers, knowing that any record of the session was being kept. Non-intrusive data collection allowed learners to maintain the privacy of authentic self-access. Conversely, intrusive studies, where video or audio equipment is used, or where the learners are in any way aware that their behavior is under scrutiny, are not as revelatory about the use of CALL in self-access.

The first study, an examination of student interaction with computer-based *Hangman* (Stevens, 1990b), involved three groups of subjects. One group of Arab university students (comprising 100 individuals, pairs, or triads) logged on to *Hangman* in the Student Resource Centre (SRC) at Sultan Qaboos University either during computer lab or self-access time. The other two groups comprised native English-speaking instructors in the Language Centre who were meant to act as "ideal" language learners against which the students could be compared.

One of the latter groups consisted of 7 instructors who selected English language texts from the student database; the other comprised 8 faculty enrolled in an Arabic course who worked individually from a database of transcribed Arabic texts. Thus the three groups contained Arab students working with English texts, and English-speaking instructors working with texts in both native and foreign languages. Although the instructors were asked to go to the SRC and work on *Hangman*, they were not aware that they were "control groups" in the study.

The purpose of the study was to identify competency-based and non-competency-based strategies used in solving the *Hangman* problems and to compare the frequency of each kind of behavior in the student and control groups. Competency-based strategies were those in which subjects, on exposing a number of letters, used orthographic cues to make plausible guesses for the remaining letters or used hints *judiciously*. Non-competency-based behaviors included using solution or hint options to provide answers (i.e., to avoid making competency-based guesses) or indulging in pressing keys in clusters rather than deliberately and individually.

The study revealed that of the 790 problems attempted by the students, only 57.09% were solved using competency-based strategies, as opposed to about 92% for both instructor groups. Chi square and Mann-Whitney U analyses showed significant differences between the student and instructor groups, but no difference between the two instructor groups. Thus, the study suggested that for ideal language learners, working *Hangman* at 92% efficiency is the expected norm, that at which a software developer would intuitively presume users of the product were operating, whereas the students were actually working at a far less acceptable 57%.

Having discovered some disparity between expectation and performance for *Hangman*, I performed a similar study on computer-based cloze. Cloze has in common with *Hangman* that both involve restoration of degraded text (indeed, the term "cloze" derives from "closure," as pointed out in Klein-Braley, 1983; and Meyer and Tetrault, 1986). Thus it would be interesting to see if the level of cognitive activity with cloze passages was as disappointingly low as with *Hangman*.

Performance on cloze exercises has been related to reading proficiency (see Jonz, 1990, for a recent overview); however, Windeatt (1986) has noted that strategies used by students in solving cloze passages on computer are different from those used by students working from print. Using video to record student interactions, Windeatt found that the CALL implementation of cloze may have impaired the use of productive reading strategies: students limited their field of view to one screen of text at a time, while on paper they scanned the entire text. And at the computer they tended to work linearly and "get stuck" on one gap at a time, rather than jump around from blank to blank, as they did on paper. Among many observations, Windeatt notes that his subjects had a strong desire to beat the computer on its own turf, and generally shunned the "help" features available in the program.

For my own study, reported at TESOL (Stevens, 1991), I used the program *Super Cloze 2.0* configured to record student keypresses in order to collect data in a scheduled computer lab hour during which 28 Arab university engineering students worked in pairs on clozed material taken from their reading textbook. The resulting study differs from Windeatt's in two crucial ways. Because the students were not videotaped, many of the behaviors recorded cannot be accurately explained. On the other hand, because the keypress data were recorded without the students being at all aware that they were party to an experiment, interaction was captured *in vivo*, with students unconstrained by the presence of a researcher constantly looking over their shoulders.

The data confirmed many of Windeatt's findings regarding the differences in strategies students employed when addressing computer- and print-based cloze passages. For example, 11 of the 14 groups of students worked the problems in strictly linear order and rarely was there any evidence of holistic reading. In the 58 paragraphs analyzed, only 9 (15.5%) were solved completely, and in all but three of these, "help" was used extensively enough to call into question whether it was the student or the computer who was doing the processing.

In fact, students on average solved about 20% of the gaps they saw on their screens, suggesting, since these were the first gaps they encountered, that they did not even glance at 80% of the material. Of course, it is impossible to know for certain that they didn't look over the entire text (and if the texts had been 80% shorter, we might have said they had worked them all in total). What we do know, however, is that the students left no evidence, such as a blank filled in near the bottom of a passage, to suggest that they were reading holistically.

Help and Abuse

In contrast to Windeatt's findings, both the *Hangman* and *Super Cloze* studies revealed extensive reliance on "help" facilities. In the *Hangman* study, students requested a look at the "Help" screen in 34% of all sessions examined. The students also used "See Solution," which displayed the paragraph intact, to give up on problems over 13% of the time. In contrast, instructors in both groups used the solution only about 4%. Finally, students used hints in *Hangman* almost 23% of the time.

Student interaction with cloze was also characterized by extensive use of "help" options: the "Help" information screen was viewed in 36% of all paragraphs analyzed. Single-letter hints were requested to help solve 9% of the gaps presented, and the students asked to see solution screens and then returned to the problem for 18% of all words attempted (1.67 times per paragraph). These data cofirmed an earlier pilot study run on 13 groups of Omani university students working at *Super Cloze*. Of 56 clozed paragraphs, these same help features were used, sometimes extensively, in fully 54.

"Help" features are intended in CALL programs as facilities for student use, not abuse. In these two studies, I considered abuse to be the use of hints to reveal more than 50% of a word. According to this criterion, students abused hints in *Hangman* in 9.87% of the problems; that is, they used the hint feature to avoid thinking through the answer almost 10% of the time. With cloze, use of hints was more reasonable. Only one group abused hints to solve most of the words in a paragraph, and in only four other passages were hints abused in solving as much as a third of the gaps. However, students in the cloze study did appear to abuse the "See Solution" option, which they requested at least 25% of the time in almost a quarter of all paragraphs attempted in the study.

> In their present configuration, computer-based cloze programs do not appear to deliver great quantities of comprehensible input

Pederson (1986) compared groups of students allowed to review reading passages while answering questions and groups who were not. He found consistently higher reading comprehension for the latter groups and concluded that "greater benefit was derived from the subjects' being aware that they were required to do all of their processing of the text prior to viewing the question" (p. 39).

In conjunction with the results reported here, his study suggests that unlimited access to hints and solutions may be diluting student engagement with the cloze program. On the other hand, students may not always be "cheating" when getting help; sometimes they are just checking what they think is the answer before committing themselves. For example, one student in this study was overheard telling his partner the correct word that fit in a cloze blank. He then looked at the solution, perhaps to confirm his guess or to check the spelling.

The data from his session will, of course, show that he looked at the solution and then typed the word, suggesting that he had copied the word from the solution without thinking out the answer himself, an implication in this case contrary to the fact. In Windeatt's experiment, the student, aware that he was being filmed, would probably have typed in the answer without checking it first.

It seems that either Windeatt's subjects differed strongly from the Arab students with regard to their attitudes toward utilizing help (a tangent on this topic ripe for research), or they may have been intimidated by (or performing for) the intrusive presence of recording equipment extraneous to the normal learning environment. In the latter event, it would appear that the intrusion of research paraphernalia on the process under study should be taken into account in future studies.

Conclusion

These studies suggest the following: (1) that students performing text manipulation in self-access may tend to rely on program-supplied help rather than on their own cognitive abilities more than developers of such software may intuitively suppose; (2) that developers of such software should build into their programs constraints on this tendency; and (3) that students read some, but not much and not holistically, with computer-based cloze. In their present configuration, computer-based cloze programs do not appear to deliver great quantities of comprehensible input, at least not for the learners in this study.

Two caveats should be stressed: (1) there may be a way of jazzing up computer-based cloze so that it encourages more reading; and (2) it may be that computer-based cloze, which now focuses attention on single gaps, could be configured to teach higher-order reading skills, though it is difficult to see how this desideratum could be implemented without the disadvantages of labor-intensive authoring.

I do not intend here to paint a wholly pessimistic picture of what students do with CALL programs; rather, I would like to suggest that what we suppose they are doing may indeed be contrary to intuition. Lacking a magic wand for finding out what is on students' minds when they work unobserved at text manipulation programs, it is difficult to avoid concluding, from data gathered so far, that students can mentally disengage when working certain programs at the computer. This is not to say that these programs as a genre are at fault; only that they should be improved at the points where they are found lacking. In the case of the cloze and *Hangman* programs used for this study, it seems that constraints on the "help" functions would improve student engagement, and with cloze, might encourage reading.

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References

Dunkel, P. (1991). *Computer-assisted language learning and testing: Research issues and practice.* Rowley, MA: Newbury House.

Jonz, J. (1990). Another turn in the conversation: What does cloze measure? *TESOL Quarterly 24*(1), 61-83.

Klein-Braley, C. (1983). A cloze is a cloze is a question. In J. Oller (Ed.), *Issues in language testing research* (pp. 218-228). Rowley, MA: Newbury House.

Kleinmann, H. (1987). The effect of computer-assisted instruction on ESL reading achievement. *Modern Language Journal, 71*(3), 267-276.

McClelland, J.L., Rumelhart, D.E. & Hinton, G.E. (1986). The appeal of parallel distributed processing. In D.E. Rumelhart & J.L. McClelland (Eds.), *Parallel distributed processing: Explorations in the microstructures of cognition, Volume 1: Foundations.* Cambridge, MA: MIT Press.

Meyer, R., & Tetrault, E. (1986). Open your CLOZEd minds: Using cloze exercises to teach foreign language reading. *Foreign Language Annals, 19,* 409-415.

Pederson, K. M. (1986). An experiment in computer-assisted second language reading. *Modern Language Journal, 70*(1), 36-41.

Schcolnik, M. (1987). RE-WORD CAI: A method for practicing reading skills with the aid of a word processor. Paper presented at the Fourth Annual CALICO Convention, April 6-10, Monterey, CA.

Stevens, V. (1991). Strategies in solving computer-based cloze: Is it reading? Paper presented at the 25th Annual TESOL Convention, March 24-28, New York.

Stevens, V. (1990a). Text manipulation: What's wrong with it anyway? *CÆLL Journal 1*(2), 5-8; rpt. *ON-CALL, 5*(1), 5-10.

Stevens, V. (1990b). Computer *HANGMAN*: Pedagogically sound or a waste of time? Paper presented at the 24th Annual TESOL Convention, March 6-10, San Francisco, CA. [Available from author.]

Windeatt, S. (1986). Observing CALL in action. In G. Leech & C. Candlin (Eds.), *Computers in English language teaching and research.* London: Longman.

Wyatt, D. (1989). Computers and reading skills: The medium and the message. In M. Pennington (Ed.), *Teaching languages with computers: The state of the art.* La Jolla, CA: Athelstan.

Software

HOPALONG. J. Higgins and M. Higgins. (1987). Bristol: Bristol University.

SPEED READER II. (1983). Torrance, CA: Davidson & Associates.

Super Cloze 2.0. S. Millmore and V. Stevens. (1990). CALL Interest Section Software Library, TESOL.

CALIS-based Reading Comprehension Exercises. V. Stevens. (1989). CALL Interest Section Software Library, TESOL.

Text Tanglers. V. Stevens and S. Millmore. (1987). Stony Brook, NY: Research Design Associates.