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What can a Computer do for the Language Learner?

One often reads that the computer «cannot replace a human teacher», or that «the computer is only an aid». This does not seem to stop people from trying to turn the computer into a kind of teacher-replacement, asking it to do things which a human being might otherwise do. In particular the computer, when used in a school, is often made to ask questions and to make evaluations of the answers it receives to those questions. When you think about it, these are highly unnatural functions for the machine. Computers were designed to answer questions rather than ask them, and they are still far too stupid and have far too little world knowledge to judge whether the answer to a «free» question is sensible or not.

One can, of course, make sure that the questions the machine asks are not «free», that there is a unique correct answer, or at least that the material writer can specify all the acceptable answers in advance. Any question-and-answer sequence where the answer is so predictable can be described as *convergent.* The form of words used so far limits the forms that can follow. It is, however, quite untypical of the majority of real-life uses of language, in which the next utterance is unpredictable and *divergent,* i.e. determined by the meaning and the situation, rather than by the form of the preceding words. In convergent discourse the machine can present questions and then match the answers it gets to its stored answers. When it does this it is following a rule-bound procedure and is contributing no judgement or intelligence of its own. The writer of the material must take responsiblity for the correctness, and of course for the relevance, of all the questions and answers in the program.

Within the context of language learning, there are many occasions on which convergent language is appropriate. Most language teachers still assert the value of drills, exercises and memorisation, as indeed do most learners. If one agrees to this, then the machine does have some interesting advantages over the workbook. It provides instant knowledge of results. In the event of a wrong answer, it can offer a second chance. It can offer the learner choices about the length or difficulty of the exercise, the amount of help to be offered, or about whether to impose a time limit. It can also store a complete «history» of the learner's performance and analyse (in a rule-bound way) all the answers the learner gave. This last facility is potentially sinister, especially if one remembers that the machine can know *what* the learners have said but not *why* they have said it.

The role of the machine in this kind of activity is that of drillmaster, and, since the activity is organised like an instructional session, the machine

is felt to carry the authority of the human teacher. Perhaps the gravest disadvantage of this is that the learner is discouraged from exploiting the whole of the language learning environment, an environment which ought to include the learner's own dormant knowledge, the pooled knowledge of a group of learners collaborating with each other, the teacher as an expert informant, and the reference books in the library. Drill and practice activities are designed to be self-sufficient. This is reflected by the way in which drills tend to deal with words or sentences in isolation rather than in context.

There are many other roles the machine could be given. One is that of tool or slave. The commonest application of this function is in word-processing, where the machine simply functions as an editing aid, providing fair copy of the writer's second thoughts. It is not «teaching» the writing skills, simply making some troublesome aspects of writing much less troublesome. Using a word-processor has made and can make a tremendous difference to writing, and this applies to the foreign language learner just as much as to anyone else. There is another interesting way in which foreign learners can use a word-processor: by using the SEARCH command to highlight all occurrences of a word or phrase, they can call up examples of grammatical usage from any text which has been typed in, using the machine as a kind of research tool. They might, for instance, look up all occurrences of the word IF in order to see how it is used. The same thing can be done with even greater sophistication by using concordance programs, and these are now becoming available for small, cheap micros.

Another role is that of storekeeper. A familiar use of computers is to store databases, and these can be of great use to learners. A recent program, WORDSTORE from Wida Software, is designed to hold students' personal vocabulary lists, with definitions and examples for each entry. The whole set can be browsed through, with learners calling up detailed information for any word that attracts their attention, or the machine can reverse roles on demand and display definitions, asking students to guess the word that fits. The main benefit of the program, though, will be as much in the work learners do in compiling or editing the list as in consulting it.

The storekeeper role is conceptually similar to the role of demonstrator, one which is so far very under-exploited. This first occurred to me when I was writing my very first computer program in 1981, a simple quiz based on noticing the word order used in *wh*-questions: «What has the cat eaten?»/«What has eaten the cat?» My first version had a typical workbook form, two examples followed by ten test items. Then I stopped to ask why I had put in two examples. Why not three? Why not three hundred? The

machine could generate examples from the stored patterns for ever; if learners felt a need to watch the machine giving examples, there seemed to be no reason not to let them do so as long as they wanted. Giving the machine a demonstrator function is particularly effective when dealing with closed sets of words or language systems which are semantically easy but which still need to be learned, such as the names of the months or the number system. The machine could display a calendar, for instance, and then generate an unlimited series of true statements about it, such as «The fifteenth of January is a Tuesday.»

The demonstrator role overlaps with that of «stooge» in the type of program which Tim Johns and I have christened *exploratory.* In this kind of activity, the computer produces language to order. It may apply a grammar rule to a word, phrase, or sentence, e.g. adding a 3rd person -s, or making a sentence negative. It may offer «advice» on what to say in a given situation, such as asking for money or apologising for lateness. In these cases the group of learners (it is always a group activity) are put in the position of judges. They provide inputs for the machine to work on, and must judge the machine's output, using the teacher or the reference library to assist them. In a sense their task is to force the machine to make a mistake, to discover what it can't do. In the process they sharpen their own perceptions of the rules which the computer blindly uses.

Perhaps the most useful role the computer can take is that of playmate, either opponent in a game or problem setter. Its value to the language learner may depend as much on the interest and imagination it stimulates as on the narrow relevance of the language displayed on the screen or typed at the keyboard. The machine can become something to be talked *about* as well as something to be «talked» *to.* Computer simulations and adventures are now frequently used in language classrooms and, if well used, can provide contexts and challenges which would be difficult to replicate without the machines.

A specifically linguistic application of the playmate role comes in the form of puzzles which encourage learners to speculate about the meaning of a piece of text. The text is manipulated by the machine, perhaps by being partially or completely masked out, or by having its sentences jumbled. The learner's task may be to restore the original form of the text, or to select an appropriate title. When undertaken as group tasks, these have turned out to be highly engrossing as puzzles and rewarding for learners, who often seem to achieve more than they expected to. The task of restoring by guesswork a completely masked out text looks initially very difficult. It calls on a great range of skills: knowledge of vocabulary and collocation, command of grammar, and common sense or world knowledge. When a

group collaborates, they are often surprised at what their combined resources allow them to deduce.

The «next step» in educational computing, as in other forms of computing, is said to be the use of artificial intelligence. For many people, including some research workers in the field, the benefits of this are seen as machines which will be able to fulfil the teacher and drillmaster roles more intelligently, with more sensitive feedback to learners about their mistakes. I feel they are looking in the wrong direction. We may have to wait for a long time before machines can fill a teacher's role with as much sensitivity and intelligence as the average human teacher. Meanwhile all the other roles, slave, storekeeper, demonstrator, stooge, and playmate, call on precisely the functions which the machine was designed for, namely data storage and data processing. Not only do they require far less intelligence (although there are many artificial intelligence techniques which can enhance what they do now), but they can be developed immediately in ways which are useful and interesting to the learner of a foreign language. We need to keep an open mind. The best ideas in computer-assisted language learning may be just round the corner, requiring us not to change the machines but to change our own preconceptions.

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