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COMPUTER PROGRAMS TO DEVELOP BOTH ACCURACY AND FLUENCY

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One of the basic questions of CALL nowadays is how to meet the requirements of the communicative approach when using the new technology. The present study summarizes one part of the work that is going on in this field in Hungary. It describes three types of programs which have been developed in English and Russian. Complex, cyclical, generative (CCG) programs may offer new perspectives in forming grammatical competence of learners, in revision of materials already studied in some detail and in remedial work. The other two program types reported in the paper serve to help with preparatory and real communicative work.

1.

Computer-assisted language learning (CALL) has attracted increasing interest in recent years in many countries of the world, including Hungary. Efforts have been made to use computer programs as *an aid to develop both accuracy and fluency*. CALL has become part and parcel of British language teaching methodology as the microcomputer has been in use in language teaching in British schools, colleges and universities for quite a long time. It is not surprising therefore that British experts involved in CALL have much experience and they play a leading part in deciding how to use micros in language learning and teaching. They have already settled such methodological problems as are still being debated in many countries of the continent. But we still cannot say that the best possible uses of the microcomputer have been found. The explanation to this is two-fold. The potential of the medium has not yet been fully exploited. On the other hand the human factor cannot be ignored. Language teachers are extraordinary folk: what proves to be useful and acceptable for many of them is considered to be disappointing for others. Let me give an example: Most of the programs reported so far work with restricted data packed economically into the limited memory space of microcomputers. If used for a longer time these programs lose their efficiency, because users easily come to know their data. So, after a while, the program becomes uninteresting to use. This problem is solved in Britain by the so-called *authoring packages* which enable the teacher to enter his own linguistic materials and to develop his own exercises within the range of the program. These programs are popular and have become fashionable. But, according to our survey, teachers in Hungary prefer "off the peg" programs to authoring packages. So we had to solve the above-mentioned problem in a different way. That is why we developed the so-called *complex, cyclical, generative programs* (Kecskés, 1986b) which will be outlined later.

2.

Much has been said about the advantages of the computer but little has been proved by well-organized experiments. But, on the basis of what has been found out so far, at least *three important principles* must be taken into consideration when developing microcomputer programs.

2.1. *An aid, not a new method*

CALL can hardly be regarded as a new method in language teaching. Its only task is to assist the teacher across the teaching activities and help the learner in acquisition, if they require this help.

CALL has no underlying learning and linguistic theory but can be of help for both teachers and learners, no matter what particular method and syllabus the teacher clings to in a given course (Kecskés, 1986a: pp. 22–23).

2.2. *Better performance*

Salisbury points out that the computer should be chosen over some other medium only if its unique capabilities can be used to better perform the necessary function (Salisbury, 1984: p. 24).

Language teachers have come out rather strongly against drill-and-practice exercises on the computer, saying that these programs contain nothing that cannot be done with pencil and paper. But this does not mean, of course, that drill-and-practice programs should not be developed. If we are able to exploit the machine's potential, this type of software will have a different format and content from the traditional drill-and-practice exercises.

2.3. *Teachers' and learners' needs*

There are various theories about how a foreign language should be learnt and taught but most of the teachers probably have always used and always will use *a mixture of these ideas,* deciding whether a particular feature of language is one that should be explained rationally, hammered in by repetition, or inferred and absorbed from authentic samples of language in use (Higgins and Johns, 1984: p. 14).

So programs of great flexibility are needed, which can be easily adapted to the requirements and teaching styles of teachers and to the needs of their pupils. With this flexibility built into the program it is much easier for the teacher to personalize the CALL work and to integrate it with other learning activities (Farrington, 1986: p. 203).

3.

Taylor maintains that

> the current climate seems to favour a somewhat less structured approach to language teaching—one which reflects the fact that linguistic functions and situations are flexible, fluid, dynamic and negotiable, and which allows learners greater flexibility in exercising their own learning styles and capabilities, to learn the forms of the language as well as their use.
>
> (Taylor, 1982: p. 31)

In order to contribute our share to this kind of approach we have been developing *three types of programs* at Kossuth University, Debrecen.

3.1. *Complex, cyclical, generative programs*

Grammar has not become any easier to learn since the communicative revolution. In teaching, grammatical competence must often be attained before real communication is possible. That is why experienced teachers frequently like to isolate and practise difficult structures before combining them with others in realistic communicative work (Swan, 1985: p. 78). In English, for example, the passive voice can hardly be used in communication if students are not aware of how to form a passive sentence.

Results of some surveys of second language teachers and students indicate that they see a need for "grammar lessons" and want computers to handle this function of learning (Sanders and Kenner, 1983: p. 35; Simonsen, 1985: p. 35; Baume, 1985: pp. 54–55; Kecskés, 1986a, pp. 37–38). So it would be a mistake if this need were ignored. The microcomputer may offer new perspectives in forming the grammatical competence of learners if we combine its technological capabilities with pedagogical principles. This is what we want to do in our CCG programs.

By *the complexity* of the program we mean the following:

(a) The program is not based on the material of a particular course book. So it can be easily integrated into any kind of course.
(b) The same program can be used *to present, practise, test and revise* the given grammatical unit according to the user's need.
(c) As the programs are based on larger grammatical units like passive voice (PASSIVE), conditional sentences (CON), the use of tenses (TENSER) in English, agreement of adjectives and nouns (MESTOPRI), negation (OTRITSANIE), word-order (POJMAI SLOVO) in Russian, they contain almost all the necessary information about the given grammatical items. Since they are carefully graded, the materials can be used at various levels of the teaching–learning process.

Complexity is in close connection with *the cyclical structure* of the programs. Much has been done to allow the user a great deal of flexibility. So he is not required to work through the program on a given path but can go straight to the specific problem that he wants to learn, practise, test or revise, because the parts of the program are arranged as independent units, each one dealing with a certain point. The user can organize the learning (or teaching) according to his needs as he is allowed to stop, review, repeat and change parts whenever he wants. In this respect our programs resemble those reported by Kidd and Holmes (1982: pp. 234–239). Appropriate feedback, help and advice features of the programs, which the student needs in order to arrive at the correct answer, play a very important role in all our English and Russian CCG programs. The users are provided with help-files which function like a reference book. When a mistake occurs its nature is referred to by the machine.

After finishing practising or testing the user can have a look at his mistakes again, comparing them with the correct answers.

The third main characteristic feature of our CCG programs is that the computer is equipped with *an inbuilt grammar,* which enables it to construct the linguistic material. The machine can generate well-formed sentences if we limit the syntax to a small number of rules and the lexicon to a few items. We must tag the lexical items in such a way that all the well-formed sentences should be realistic and usable. In our opinion this is probably *one of the greatest advantages of the computer.* In a book there are only a restricted number of exercises to practise a certain grammatical item. But the computer can generate thousands of well-formed sentences for the student to manipulate until he manages to automate the use of the necessary rules. Generation can be guided by the student or randomized. We have various sentence structures in the program, which the computer can build up, using several inbuilt syntactic rules. In one of our English programs called PASSIVE the number of sentence structures the machine can generate is almost a hundred.

CCG programs are used in class and out of class. According to our surveys teachers apply them for presentation and revision in class. They may be particularly effective as *an aid to revision* of materials already studied in some detail. These programs include a built-in review of not only those language forms that the students do not know, but also forms that they have already learnt or are in the process of acquiring. For example the PASSIVE program concentrates not only on how to form a passive sentence but on forming and using tenses, modal verbs, verbs with two objects, interrogative and negative sentences as well.

According to Krashen, if acquisition is a natural, developmental process, we must recognize that not all students in our class will be at precisely the same learning stage at the same time. A focused sequence of grammar exercises that follows a teaching syllabus may not, therefore, coincide with any learner's sequence or precise needs at the time (Krashen (1979), cited in Taylor, 1982: p. 35). CCG programs can satisfy students' individual needs in remedial work.

3.2. *Preparatory to communication programs (PTC)*

Real communicative work must be carefully prepared. Preparation can be helped in many ways, including the use of computer programs.

Correct word-order and intonation play a very important role in communication. Our game-like program CATCH THE WORD serves to practise this function. Words float down a "stream" in a jumbled order and the "angler" is expected to catch them one by one so as to build up a correct sentence. The program knows all the possible word orders and accepts whichever you type in. Most of these sentences can be uttered with either affirmative or interrogative intonation, which always depends on the situation the utterance is used in. For this reason after you have completed the sentence the computer displays each time all possible correct word-orders with the appropriate punctuation marks, regardless of which correct answer you chose. After each turn it is advisable for the teacher to ask the students to create situations in which the sentences with different word-orders and intonation can be used. The program is also of the generative type so it can produce a vast number of sentence-types. We have developed its Russian and French versions as well.

Microdialogues are important elements of colloquial style. They are especially useful to

show learners that there is no one-to-one relation between a function and its exponents (Brumfit, 1979). An example taken from Maley can illustrate this (Atkinson, cited in Maley, 1980: p. 10):

1. A—Coming for a drink?
   B—Sorry I can't. My doctor won't let me.
   A—What's wrong with you?

2. A—Coming for a drink?
   B—Sorry I can't. My mother-in-law won't let me.
   A—What's wrong with you?

The sentence, "What's wrong with you?" has two different communicative meanings. Its function can only be determined in the situation in which it is used. In our Russian program called LIME we try to demonstrate this peculiarity of the language. Various microdialogues appear on the screen without the required forms of personal pronouns and nouns. The user is expected to type in the missing words on the base of figures, which represent different persons and are displayed on the screen at random. After each turn the figures change so the user has to write in further new words. But this is only one side of the exercise; the other is more interesting and useful. The teacher can ask the students not only to fill in the gaps but to *perform the situation* with the necessary intonation, paying attention to changes in meaning, if any. This time the program "generates" the figures and not the situations.

3.3. *Stimulating communication*

Communicative types of programs are intended to stimulate classroom conversation with the participation of the teacher and the students. Not many of them have been reported so far. Even those reported are based on simulation of various life-like situations. One of the best-known of them is GRANVILLE, which is a French program (Jones, 1985, 1986). Modelled on a real town in France, it simulates a five-day holiday in which the holiday-maker can choose exactly how he or she would like to spend the five days. It is an extremely flexible and amusing program, which really stimulates conversation in French. But it does not control the linguistic material used by the participants of the conversation. When we started to develop our communicative type of program called CHOICE (Kecskés, Hare, Agócs and Mihálydeák) we decided to use a different approach. The program describes a situation which is the following: There is a vacancy on the staff of a newspaper. There are three candidates for the post. The question the users have to decide is: who will get the job? In order to do so, they can put questions to the computer about the three persons involved. The subject matters the program is capable of handling are restricted. So questions can be asked about the candidates' personal particulars, qualifications and previous jobs, attitude and characteristics. If the question is correct, both grammatically and semantically, the answer will be given. The program can handle almost all the possible ways of putting questions if they refer to the subject matters the computer can handle. The users have to decide who will get the job, using the information the machine is able to give.

The program can be used in the classroom with the teacher and the students sitting round the screen, discussing what questions to ask, processing the new information as it is gained from the computer and forming their own opinion. The program is just being developed with the use of artificial intelligence techniques. Several problems have had to be solved

and are still waiting for solution in the course of the work. Let me give some examples: there are no restrictions on how to ask questions, so that the program can be used at different levels; the only restrictions are that the question must be constructed according to appropriate grammatical rules and cannot refer to information already given. For example:

—What is Jack like? (acceptable)
—What about Jack? (not acceptable)

The same information can be asked for in different ways. If we want to learn about Jack's marital status we can ask:

—Is Jack married?

But if we ask like this:

—How long has Jack been married?

we can get two pieces of information: whether he is married and, if so, how long.

But what happens if he is not married. In the first case there is no problem, the answer is:

—No, he isn't.

But in the second case the machine must know that he is not married and the correct answer should be:

—He is not married.

To solve this problem we had to build in *three main types of data-block:*

positive answer (with information),
negative answer (with information),
not existing (with the appropriate reference).

As can be seen, this type of program is exceptionally difficult to develop. But we are convinced that the application of artificial intelligence techniques may add a new and creative dimension to CALL.

4.

We would agree with Wyatt when he says that the computer "is a medium that reveals the methodological assumptions of its authors with unusual clarity" (Wyatt, 1984: p. 10). The machine is an obedient slave and it will do what we want if we know how to teach it to do this. The basic question that must be decided is *what is worth teaching the computer?* or, to put it in an other way, *how best to use it?* In our opinion this question is still waiting to be answered.

LIST OF PROGRAMS

MESTORPI: Kecskés and Agócs, 1986. Wida Software, London.
OTRITSANIE: Kecskés and Agócs, 1986. Wida Software, London.
POJMAJ SLOVO: Kecskés and Agócs, 1986. Wida Software, London.
PASSIVE: Kecskés and Papp, 1985. Okta, Budapest.
CATCH THE WORD: Kecskés and Agócs, 1985. Okta, Budapest.
CON: Kecskés and Szandai, 1985. Okta, Budapest.
LIME: Kecskés and Reményi, 1986. Okta, Budapest.
TENSER: Kecskés and Reményi, 1985. Okta, Budapest.

The programs described in the paper are available from Wida Software, 2 Nicholas Gardens, London W5 5HY, United Kingdom and Okta GM, Budapest, Pf. 44. 1476, Hungary.

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