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A multi-purpose authoring program

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MAP is a revised ESL version of STOB I reported in the *CALICO Journal* (Kecskés-Agócs, 1989). It requires an IBM PC/XT/AT or compatible with at least 512 Kbyte of RAM and a monochrome monitor or IBM colour monitor with a colour graphics card.

The aim of MAP is twofold:

1. It helps teachers to plan their work: to produce a collection of texts, exercises and lexicons according to their needs. Teaching materials can be prepared for pupils and students of various ages and levels, for classroom and individual work alike.
2. The program makes it possible for students to discover how language functions. They can produce their own texts in the editor and check together with their peers and the teacher whether their production works properly. So MAP can be an useful tool in teacher training as well.

The structure of MAP

The whole structure of the program is inspired by the fact that any piece of information can be conveyed by using different elements of the language: the content of the information remains approximately the same. Based on this fact a text-generator has been built up, which is able to produce the same information using a great variety of forms of language.

The program is an "empty" system consisting of two parts: the editor and the main program.

The Editor

This is where the teacher can prepare his/her own material. The editor comprises a built-in word processor and an interactive lexicon.

The word processor is a combination of the "traditional" spread-sheet and word processor. Any kind of text can be typed in if it meets the following requirements:

- *text* is to be understood here in the narrow sense of written narrative,
- each text can contain no more than 10 sentences,
- each sentence can comprise less than 30 words.

But it is not compulsory to use the built-in word processor to prepare a text. You can load, for example, ASCII-files into the program, which have been produced on any kind of word processor. MAP will work with these files provided the texts meet the above mentioned requirements.

After a text has been entered the computer automatically puts into a separate table each sentence constituting the text. This makes it possible for the teacher to build up a schema (or schemata) for each sentence, which resembles the *substitution table*.

Synonymous words, phrases and clauses can be used within each schema to express the same (or similar) information (content). These elements have to be chosen with exceptional care because coherence and cohesion must be maintained among the elements of each possible sentence and the sentences of each possible version of the text.

Our earlier generative programs are equipped with a simple "built-in grammar" and a lexicon, which enable the computer to produce the language material without the teacher having to intervene in the process (Kecskés 1986; 1988). MAP, however, is an authoring tool. Therefore, the structure of the generating part of the program has been simplified to a great extent so that teachers are able to use it to enter their *own material*. Text-generation is based on the substitution tables, which makes the use of the program flexible because language materials (texts) can be altered, amplified, changed at any time according to the needs.

The interactive lexicon starts working when the preparation of the text has been completed. The computer tries to identify the lexical items, one by one, that occur in the substitution tables. Every form, finite or non-finite alike, is compared to the items the lexicon already contains.

An important feature of the lexicon is that it works in an interactive mode. If a certain form has been identified the computer reveals the entry to which this word may belong. It is up to the user to decide whether that form is the one s/he requires. If not, a new entry must be opened in the lexicon for the new item. The following pieces of information are asked for:

- word in the text: *closed*
- stem: *close*
- part of speech: *verb*
- forms: *closes, closed, closing*
- meaning: *fermer (in French)*

If the morphological forms of the new item are rule-governed (regular forms) the

computer automatically generates them when the appropriate key is pressed. Irregular forms must be entered by the user.

This interactive procedure is of great importance for various reasons. This is how the problem of homonyms can be solved. If one and the same lexical items may belong to various parts of speech (which often happens in English) you have to indicate which part of speech it belongs to in the given text, for example:

The teacher orders us to work hard.

The computer may identify the form *orders* as the plural form of *order* (noun). But it is, of course, a verb in our sentence. So searching must be continued by pressing 'C'. If the word *order* is included in the lexicon as a verb as well, then you stop searching and ask for the next word in the text. If not, a new entry has to be opened for the verb *order*.

You can open as many entries as you want under the same label. It is up to you to decide what principles to use when building your own lexicon. We find it most favourable to open a new entry each case when one and the same item has a different function. This might make it easier for the students to work with the program.

The lexicon can be edited not only in the editor part of the program but in every word processor. The lexical items are stored in the TEXT.LEXASCII file. The maximum number of words the program can handle is 3000. If you want to write in the meaning in German, French, Spanish, Hungarian or others, use KEYBGR, KEYBFR, KEYBSP, KEYBHU etc. utilities (not included in our system).

This option gives you the opportunity to design your own lexicon absolutely text free, which may be especially useful in the case of ESP. The vocabulary lists for Business English, Medical English etc. can be prepared in advance.

As we mentioned above, MAP is an 'empty' authoring system but it has got some 'filled' versions as well. We have filled the editor with language material (texts) so as to meet the needs of teacher who prefer 'off-the-peg' programs. The versions for elementary, intermediate and advanced students of general language courses have been produced so far, and a Business English and an English for Computer Users versions are under development now. MAP can be very well adjusted to the requirements of 'a process-oriented approach to the teaching of English' (see Widdowson 1984:186).

The main program

Based on the language material prepared in the editor and the information entered into the lexicon the main program offers several 'services' and exercises both to the teacher and the student.

Generating the text

This part of the program can serve as a sort of utility for the teacher and as a type of exercise for the student. First of all the text you want to work with can be chosen. Then a possible version of the selected text has to be generated. There are two options to do that:

- (i) either the computer makes up the text,
- (ii) or generation can be guided by the user.

Exercises will be based on that version of the text which is produced in either of these ways.

When generation is controlled by the user the computer offers several alternative versions for each sentence. This makes it possible for the teacher to plan the work with the program. If, for example, s/he wants the students to practice using prepositions, s/he will make up a version of the text which contains as many prepositions as possible, or, if certain lexical items or grammatical forms have to be concentrated on it is possible to build up the text according to these needs. Generation is based on the substitution tables in the editor. The computer uses the schemata which have been built up by the teacher.

This option can also be used as an exercises type to practice stylistics and text coherence. If, for example, both British and American English versions have been entered in the editor, the students can be asked to produce either a 'pure' British English or an American version of the text or correct the text the computer builds up at random using elements from both versions. Based on this feature of the program various types of business letters can be produced by the students as well. Another application can be: to enter words, phrases, sentences in the editor which are both grammatically and semantically correct but not pragmatically. That is to say, they don't match the content of the text or spoil coherence. The interesting thing is that, as the generator works at random, so sometimes it will produce absolutely correct text-version, but when it follows a path that contains pragmatically false words, phrases or sentences the text will need correcting. That's what the students are expected to do.

The teacher can have several versions of the same text generated, making print-outs of each of them and giving them to the students. They have to find out whether there is any pragmatic incorrectness in the particular text-version they have at hand.

This feature of MAP can be exploited in teacher training as well. We ask our students to build up a text in the editor that can be used for different kinds of teaching purposes. While working with the editor they can learn a lot about text coherence, cohesion and how to design teaching materials.

Using the lexicon

Vocabulary teaching cannot be ignored no matter what particular syllabus or method a teacher clings to in a given course. Richards emphasizes that in preparing teaching materials we begin with a rich concept of vocabulary. The goals of vocabulary teaching must be more than simply covering a certain number of words on a list. We must look to how teaching techniques can help realize our concept of what it means to know a word (Richards 1985:188).

MAP makes it possible for the teachers to design and use their own lexicon when working with different types of texts. There are two types of vocabulary list available in the program either on screen or on printer.

The first one (on the first menu screen) contains all the lexical items that can occur in any of the variations of the texts (materials) which have been entered in the editor so far. Words can be asked for in alphabetical order either in the form of a simple list or classified according to their part of speech marker.

The second word list consists of the lexical units of each separate text. When a text is chosen for elaboration the students can become acquainted with all the items that can occur in any variations of the given text. This option makes it easier for the teacher to plan the teaching process. The lexicon can be consulted at any part of the program by pressing the <F2> key. This seems to be a very useful 'service' for the students because they can get information about any lexical item that occur in the text they work with.

The exercises

Before choosing from the exercises the teacher has to decide whether to show the text to the students or not. This is an important option because it is easier to work with a text that they have already seen in one of the possible versions.

At this point the text can be saved and the exercises will be based on this variation.

But there is another alternative as well. You can ask the students to read one of the variations of the text and then go back to the menu where you can order the computer *to produce the same text in another version.*

This option is very important from the point of view of the learning process. In this way we can encourage the students *to concentrate on the content of the text and not on the forms it contains* because we can be sure that the version the computer builds up at that stage will significantly differ from the one the students have read previously, because of the random-generation. Even a Cloze-test can be made more interesting if the students read the text in one possible version and then it appears blanked out in another version. This gives them the opportunity to use synonyms when filling in the blanks.

MAP can generate three different types of exercises:

- reconstruction
- unscrambling
- rewriting

Reconstruction

Various Cloze-tests are to be produced in this part. Randomly selected words or various parts of speech can be omitted from the text. The program is capable of distinguishing parts of speech on the basis of the information entered in the editor. Synonyms are also accepted.

There is an option to omit both verbal forms and auxiliaries at the same time. In this way 'traditional' grammatical exercises or tests can be produced, which are based on passive voice, conditional, causative etc. You enter either separate sentences or a text in the editor containing the required grammatical forms and they are omitted in the main program as needed. For example (underlined forms are omitted):

Verbal forms + auxiliaries:

We should have gone to the party if we had been invited.

Verbal forms:

We should have gone to the party if we had been invited.

Auxiliaries:

We should have gone to the party if we had been invited.

These exercises can be printed out by pressing <Shift+PrtSc> and used as traditional test papers. (<Prt Sc> option is available not only here but wherever needed.)

Unscrambling

Either jumbled sentences or jumbled words can be asked for. If the 'jumbled sentences' option is chosen the computer jumbles the sentences of the text and the student is expected to reorder them by moving the cursor from sentence to sentence, back and fore.

In the case of jumbled words a sentence is chosen at random from the text and the order of words is mixed by the computer. The words have to be reordered according to the context as the part of the text that precedes the randomly chosen sentence remains on the screen. When reordering is finished the rest of the text automatically appears on the screen.

Unscrambling can be made more interesting if you let the students become acquainted with one possible version of the text and then ask the computer to make up another version whose sentences will be scrambled. Students have to unscramble not the version they have seen before, but the new one. So they are supposed to concentrate on the sequence of events in the text no matter what forms have been used to express them.

Rewriting

Rewriting is something new. This is the central part of the program in which it is not the original text that has to be built up again word by word but the pieces of information it conveys.

First the student has to understand the message which appears in one possible version of the text either generated by the computer at random or built up sentence by sentence by the teacher from the options offered by the computer. Unknown words can be looked up in the lexicon whenever necessary by pressing <F2>. When the "rewriting" mode is switch on, the text is deleted and *the students' task is to produce a possible version* of the text. This can be done by using four different strategies:

- trying to reconstruct the text without any help,
- using the key-words offered by the computer,
- using words that come next in the text,
- trying to find lexical items, phrases, clauses

other than those in the original text or among the key-words in order to express the same content.

These strategies can be applied simultaneously. The computer is ready to accept any correct entry that has been entered in the editor. There is nothing to worry about if you find further correct solutions that the computer doesn't "understand" yet. You can go into the editor and modify the substitution tables as required.

When key-words are asked for, they are generated by the computer on the basis of certain rules which can produce NPs (noun phrases) and VPs (verb phrases) using the vocabulary of all possible words that can occur in the given text. These phrases guide the students as much or as little they need this support. There is no compulsion to use them.

When rewriting the text the students have the feeling that they are working with a word processor. All the function keys can be used. The only thing they have to bear in mind is that if they press <Crsr Up> the cursor jumps to the last but one word and the last word is deleted. So it is possible to return to any part of the text. In addition, they are allowed to rewrite even those parts which have been accepted as correct. If they feel trapped, e.g. they cannot find out which word is needed to continue, the key <Crsr Dn> has to be pressed and then the computer will suggest one possible right word.

Scanning goes word by word after pressing <SPACE>, <ENTER> or any punctuation mark. After each input the message "Thinking..." appears and if it is correct "O.K..." indicates that the entry is accepted. If not, the error message "Wrong!..." is displayed. If a punctuation mark is missing the message is "Punctuation!..."

When the option "With the words that come next" has been chosen, the machine takes into consideration all the branches in the substitution table and gives its proposals: which words to go on with. Consequently sometimes 3 or 4 words appear on the screen but in some cases only one. Students can, however, use any words they think might be correct. They aren't forced to use only the ones offered by the computer. This option can be especially interesting for those who want to learn about word-order and syntactic rules in English.

The basic idea is to give the students as much "freedom" as possible. Much depends on their inventiveness and creativity. They are expected to puzzle out what language elements can convey the necessary information. Exploring the machine's competence is an exciting task even for those who are more advanced in the language.

In all the three types of exercises the teacher can get the students' score and check how many times they have tried to ask for help, e.g. to reveal the right answer or

the next correct word. This is shown in "Promptings:..." on the screen.

Conclusions

MAP is an attempt to combine within the confines of one program (*) the three most important requirements of recent CALL program design:

- concentrating on meaning rather than on form,
- the use of authoring techniques,
- the adjusting of the structure of the program to the needs of teachers and learners.

The program is a kind of frame that offers much with its flexibility. It is up to the teacher to fill it with authentic material.

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Note

The programming was done by Dr László Agócs, Head of the Department of Educational Technology at the Medical University, Debrecen.

The program can be ordered from Computer Assisted Learning, 2634 E. Malvern, Tucson, AZ 85716, USA.