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TRANING COMPUTER PROGRAM FOR READING COMPREHENSION

Формирование навыка просмотрового чтения является неотъемлемой частью обучения иностранному языку. Разработано множество подходов и методик для решения данной задачи. Современные информационные технологии предлагают разнообразные программные продукты для тренировки и контроля умения работы с текстом. Авторы статьи представляют учебную программу, созданную на основе лингвистической базы данных системы автоматической обработки англоязычных текстов публицистической тематики. Компьютерная программа может быть использована как для аудиторной, так и самостоятельной работы студентов.

К л ю ч е в ы е с л о в а: система автоматической обработки текстов; лингвистическая база данных; обучающая компьютерная программа.

The skill of viewing reading is an integral part of teaching a foreign language. Many strategies and teaching technics have been developed to solve this problem. Modern information technologies offer a variety of software products for training and controlling the ability to work with a text. The authors of the article present a computer program created on the frame of the linguistic database that is used for processing English publicistic texts. The computer program can be used both for classroom work and for independent student's work.

K e y w o r d s: automatic text processing system; linguistic database; training computer program.

Reading comprehension is the ability to process text, understand its meaning, and integrate with what the reader already knows [1, p. 67]. A student needs some fundamental skills required in efficient reading comprehension. Among them are

knowing vocabulary, ability to understand meaning of a word from the context, identify the main thought of any passage and conceive the idea of a text. A learner should also recognize the propositional structures used in a passage and determine its tone and understand the situational mood (agents, objects, temporal and spatial reference points). Could a teacher do to enhance the reading skills of students so that they realize more gain from their reading efforts? There are a lot of strategies and teaching technics for it. Some of them are focused on recognizing story structure to identify the categories of content, the others are based on semantic organization and metacognition, but the monitoring of student's comprehension is also considered as the necessary part of a teaching process [2, p. 81]. The monitoring of student's comprehension can be done by text summarizing, making comments, putting and answering the questions etc. Many types of software are developed nowadays for this purpose. They teaches students to build their knowledge and vocabulary to achieve a greater understanding of what they read. For example *ReadWorks,* a free online program for teachers and students. It is simply loaded, have many visual affect and can be used for all level of pupils [3]. The developers of *ReadWriteThink* uses a special strategy for students to build their own knowledge and vocabulary to achieve a greater understanding of what they read [4]. Similarly, *Reading Comprehension and Software* uses a variety of strategies to enhance reading and reading comprehension. Their reading comprehension program is available to teachers, parents and pupils. It relies on research-based classroom strategies to strengthen literacy skills including phonics, fluency, vocabulary, and comprehension [5].

This paper presents a training computer program for acquisition of reading comprehension skills. The choice of the approach to the development of the computer program is connected with the specific task assigned to the automatic processing system. Taking into account the fact that the purpose of our research is to identify the main subjects, objects and their actions from texts, in the general structure of the automatic processing system the following blocks are included:

1. Lexical-semantic block to analyze the words of an incoming sentence. The purpose of lexical and grammatical analysis is to analyze the input flow of words with the recognition of parts of speech: nouns, adjectives, verbs, adverbs, etc., as well as other morphological parameters such as gender, number, case, etc. The basis of this block is an alphabetical dictionary. Today, the most widely used vocabularies are word-form dictionaries, in which all possible forms of any word are stored with an indication of possible lexical and grammatical classes. In order to detect the unknown words that are not presented in the dictionary, identification algorithms are used. There are formal marks for parts of speech (endings, suffixes, etc.) in them.

At the stage of lexical and grammatical analysis, the problem of eliminating lexical polysemy of words is also solved. A large number of words have the same spelling, but they belong to different parts of speech. Any input word of the text, taking the context into account, must be matched with a single lexical and

grammatical code. In relation to the Russian language, this task can be done easily. The well-developed morphology of Russian language makes it possible to do this with almost one hundred percent accuracy. In English, a simple algorithm that assigns the most likely lexical and grammatical code to each word in the text works with an accuracy of 95–96 % [6].

2. Syntactic analysis block, which is based on a list of marks to parse an English sentence and to identify parts of sentence in it (groups of subject, verb groups etc.). Syntactic analysis involves segmentation (fragmentation) of the text into sentences or fragments similar to them to build syntactic structures. The automatic parsing procedure allows you to obtain a formalized syntactic structure of a sentence using algorithms. The result of the automatic parsing system is the representation of the syntactic structure of the input sentence of the processed text as a syntactic tree. The initial information needed for such system to work is the morphological representation of words as a chain of codes that represent the grammatical class of a word and its inflectional characteristics. Thus, the morphological analysis provides access to a denotative information by codifying the words of the text. The next step is to create the semantic structure of the text by syntactic, semantic and punctuation means. There is a certain parallelism between the syntactic and semantic structures, which reveals itself in the correspondence of the structural links to the semantic ones.

3. Semantical-syntactic analysis block that defines the semantic functions of keywords that are included in the groups of words selected during the parsing process. Semantic analysis consists in the extraction of the main semantic units (words, phrases) from the document and recognition of the associative, cause-effect, and other relations between them. The main means for this is a certain system of rules. The semantic stage is the basic component of automatic text understanding systems. It acts as a moderator and must coordinate three different "languages":

- the language of linguistic structures constructed by the system (plus other linguistic knowledge) that it receives at the input;
- the language of the subject field to which the text belongs and the terms of which it is advisable to use when constructing the output structure;
- the user language for which the automatic text processing system should provide information.

The information that the automatic text processing system obtains from the text must be presented in a language that a user understands both from the natural language point of view and from the point of view of the subject field that he knows as a specialist. Otherwise, the result of the system operation cannot be called information for this particular user – the recipient of the information. The work of this block in a proposed computer system is provided by using the semantic functions of the formal language TABLING [7] and allows the computer to answer a number of the most important questions regarding the content of the

text by making a table of its main content. Here, in accordance with the meaning of the semantic functions of the TABLING language, the components of the main content of the text mean:

(AGA) – subject 1, the active animate initiator of some action or event;

(AGN) – subject 2, the active inanimate initiator of some action or event;

(ONG) – object, the main object of some text event;

(R) – action, a representation of a specific action of an active animate initiator;

(PRP) – property (attribute) – a property of the object, process, or material stated in the text;

(LOC) – the place where a specific text event occurred;

(TIM) – the time when a specific text event occurred.

The proposed computer program is developed on the base of a computer program for automatic abstracting of English publicistic texts [8]. The program is implemented in the C# (Sharp) programming language. The main element of the program window is the workspace for loading one of the proposed texts written in English. You can work with the window elements by selecting the required file in the tool bar. Having examined the content of the text, the student moves on to the knowledge control mode using the "Go to Test" button located in the upper right corner. The control questions are formulated in such a way as to check the correct understanding of the proposed text: Who is the main character in the text? What does the text deal with? What are the main actions performed by the main characters? What countries are mentioned in the article? When did the events take place? After filling in all the workspaces, one can check how accurate these answers are using the "Check Answers" button in the bottom left corner. The answers selected by a trainee are shown in the "Your Answer" line, and the correct ones are shown in the "Correct Answer" line.

The presented computer program can be used as a simulator at practical English language classes to form the skill of perception and interpretation of English publicistic texts. The program is open for modification and can be adapted to work with English language texts of another subject field by adding supplementary material to the automatic alphabetic dictionary. This is the main advantage of using the presented program in practical English language classes, since a teacher can save time significantly while searching for necessary and effective educational material, depending on what methodological goal the teacher sets. The program can also be helpful for a student independent work. With the help of Internet resources, one can introduce new lexical material, material on country studies, make the teaching more visual, consolidate the educational material and equip students with self-development strategies.

Modern educational process in institutes of higher education obligates academic staff to prepare professionals, who are able independently update their specific professional knowledge. In accordance with an on-line tutorial on an individual plan more than quite half of loading is taken for the independent study

that requires from students to have the high level of general educational abilities and skills and basic methods of research work. So the implementation of software in teaching learning process for students in universities is the necessary part of their studies.

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