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Educational Matters
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VOCABULARY ENRICHMENT IN COMPUTER SCIENCE FOR INTERNATIONAL STUDENTS AT THE PREPARATORY DEPARTMENT OF THE UNIVERSITY

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Abstract. Foreign students coming to study in Russia learn the Russian language at all levels, enriching their vocabulary. Besides possessing the lexical minimum of the Russian language, foreign students studying at the preparatory department of the Russian university need to master specialised terminology used in computer science, physics and mathematics. These subjects are included in the list of disciplines of the supplementary general programme, which aims to provide a preparation course for foreign citizens and stateless persons to master professional educational programmes in the Russian language. This article describes the need and conditions for enriching and activatingthe vocabulary of foreign students, while providing a general description of research methods. It expounds on the structure and content of the computer science course at the pre-university stage of training for foreign citizens. The paper considers the process of teaching foreign studentsthe terminology used in the computer science course. This paper provides a number of examples of new terms as well as exercises related to their acquisition. It is concluded that teaching computer-science vocabulary to foreign students is one of the most important components of teaching information science and expanding the learners' vocabulary in general.

Keywords: computer science; foreign students; preparatory department; vocabulary

Introduction

Vocabulary is a set of words, the meaning of which one understands and can explain (Mardakhaev 2002). Vocabulary ultimately forms the lexicon of a person.

Vocabulary acquisition is one of the main challenges in teaching the Russian language. However, the other subjects taught at the preparatory department of a technical university – computer science, mathematics, physics – also play an

important role in solving the general problem namely,intensive language training for foreign citizens. The selection of vocabulary is of primary importance in this process(Bogatyreva, Rumyantseva 2013). The quantitative and qualitative improvement of vocabulary provides a foreign student with a better understanding of what is being read, and the ability to understand with less difficulty the teacher's speech,whilecommunicating within the framework of the discipline being mastered.

Words are characterised differently; they have unique origins, degrees and scopes of usage, as well as distinctive registers. Within the framework of this study, the sphere of usage is of interest, namely professionally limited vocabulary and specialised terminology. A term isa word, or word-group, representing a notion from some specialised field, for example; science, technology, or art (Ozhegov, Shvedova 2009).

Enriching the vocabulary of students involves their awareness of the lexical and grammatical meanings of words, the scope of use. To fully learn a word means:

1. to understand its meaning and rules of usage;
2. to remember the word and the rules of its usage;
3. to learn to use the word properly (quickly and correctly) in one's speech and to understand it when spoken by others.

The lexical units to be mastered by students over a certain period of time is called the lexical minimum(Azimov, Shchukin 1999). As noted by E.I. Markina, the following are the characteristic features of the lexical minimum:

– it is orientated at a particular stage (or level) of learning and includes lexical units to be mastered within the allotted time;

– the number of lexical units is calculated proceeding from the learning environment, as well as the students' ability to assimilate a certain number of lexical units within a given time;

– the knowledge of words covered by the basic vocabularymakes it possible to use the language as a means of communication and ensures the achievement of learning objectives at a particular stage (Markina 2011).

The following goals indicate that the student has broadened and enrichened his vocabulary:

1. a quantitative increase in the volumeofwords and the qualitative improvement of existing vocabulary;
2. learning how to use already known and newly acquired words.

Assessment of the level of understanding and assimilation of new words by foreign students lies within the sphere of psycholinguistics (Kolobaev 2014; Pishchalnikova 2021) which normally falls beyond the area of interest of natural science teachers. When introducing new terminology, they predominantly rely on own experience and intuition, providing only pedagogical assessment of the level of assimilation.

In order to achieve the set goals, the authors used the methods and techniques contributing to the acquisition and activation ofvocabulary at computer science classes.

2 Materials and methods

2.1 General description of research methods

This study is based on the authors' experience in teaching computer science to students from Mongolia, Uzbekistan, China, and Vietnam at Irkutsk State Transport University (IrGUPS), Russia.

The main research methods were as follows:

– theoretical: analysis of specialized linguo-didactic, educational and methodological literature, and textbooks;

– communicative: principles of individualisation, situational and contextual communication, and novelty of language;

– empirical: pedagogicalobservation of the learning process; learning experiment;

– qualitative/quantitative analysis of experimental data.

2.2 Principles of organising work over the students' vocabulary

Many authors (Bogatyreva, Rumyantseva 2013; Knyazkova, Kasatkina, Lyatti 2019; Kuzmina, Kochkina, Kuzmin 2021; Panova, 2021; Novikov 1972) pay attention to the issues of enriching general vocabulary forforeign students, including those studying computer science (Cherepanova 2021).

L.A. Novikov recommends an effective solution for creating a vocabulary lesson:

1) it is necessary to convey the semantics of the words to students in an understandable way through translation, use of their native language, pictures, gestures, etc;

2) to arrange the studied words not only inalphabetical order, but also by topics;

3) to show how these words are used in conjunction with others,along with providing specific examples;

4) the selection of words should take into account the cultural and historical significance, as well as contemporary use ofthe modern Russian language. Vocabulary semantics, i.e. studying word meanings and backgrounds, plays a relevant role in modern lexica (Novikov 1972).

According to teachers of Russian as a foreign language, when teaching vocabulary words these are grouped and organised in themes. For this purpose, the studied lexical-thematic groups should include lexical units combined according to extralinguistic principles, based on the semantic relation with real-world objects (Gorovaya 2018).

The structure and content of computer science at the pre-university stage of trainingare developed taking into accountthe specific features of the system of

education for foreign students, and their continuity in the preparatory department and the first-year coursesat higher education institutions. The course introduces the basic concepts of computer science to foreign students and includes assignmentshelping them to learn the terminological vocabulary, the basic techniques of working with software packages and information technologies used for processing, storing and transferring information traditionally used in Russia. With regard to the above-mentioned recommendations for compiling a vocabulary lesson, as well as the principles and content of teaching computer science to foreign students at the preparatory department of the university (Mikhaelis 2014) in order to enrich the vocabulary of foreign students, the authors used the thematic principle of working with vocabulary, in which the main lexical material is presented in the following topics:

1. Presentation of information in computers.
2. Configuration of personal computers.
3. Basic techniques of working in the Windows operating system environment.
4. MS Word text editor.
5. MS PowerPoint programme for making presentations.
6. MS Excel spreadsheet processor.
7. Fundamentals of algorithmisation and programming.

The study of any general-education discipline starts with the introduction of special terms which represent the designation of objects, phenomena, processes or effects. Therefore, every new topic in computer science begins with the introduction of terms inRussian, which can be looked upin the dictionary and translated into the student's native language. The introduction of new words across all the topics of the computer science course is organised in the same manner.

The foreign students'vocabulary within the framework of the subject is acquired with the use ofthe "Russian-Mongolian-English dictionary in computer science and basics of programming"(Russian-Mongolian-English Dictionary of Computer Science and Basics of Programming: for foreign students of preparatory department of a university 2019). The entire volume of the dictionary amounts to more than 1400 terms and terminological combinations, most commonly used in computer science and in programming courses ata number of Russian universities, as well as a concise corpus of words and phrases characteristic of the scientific style of speech. The focus of the dictionary is made on the Mongolian language, due tothe fact that most of the educator's workat the preparatory department for foreign students of IrGUPS is focused on teaching Mongolian citizens (Mikhaelis 2014). One of the dictionary pages is shown in Figure 1.

А

автоматическая замéна *(автозамéна)*, -ы, *ж.р.*	автоматаар солих	automatic replacement
автоматическое заполнéние *(автозаполнéние)*, -я, *ср.р.*	автоматаар гүйцэтгэх	autocomplete, automatic filling
автоматическое сохранéние *(автосохранéние)*, -я, *ср.р.*	автоматаар хадгалах	auto backup (auto save)
автоматическое суммúрование *(автосýмма)*, -ы, *ж.р.*	автоматаар нэмэх	auto-sum
автоформáт, -а, *м.р.*	автоматаар өөрчлөх	autoformat

Figure 1. A page from the Russian-Mongolian-English dictionary

When operating the computer, the first problem foreign students are faced with is how to understand the names of symbols and to find their representation on the keyboard. Therefore, the students are given a homeworkassignment: to memorise and demonstrate their understanding of the symbols on the computer keyboard (Fig.2). In total, this list comprises more than 30 symbols.

ЗНАКИ ОБОЗНАЧЕНИЙ НА КЛАВИАТУРЕ КОМПЬЮТЕРА

&	амперса́нд
‘	апо́строф
>	бо́льше
>=	бо́льше и́ли равно́
?	вопроси́тельный знак
!	восклица́тельный знак
:	двоето́чие
“	двойна́я кавы́чка
«	двойна́я кавы́чка
,	запята́я
*****	звёздочка
$	знак до́ллара
[ ]	квадра́тные ско́бки

Figure 2. Symbols in the Russian language on the computer keyboard

Every topic includes practical assignments based on new words, the quantity of which depends on the breadth of the topic.

The students write down new words in their workbooks at the beginning of the lesson and translate them into their native language. Figure 3 shows the new terms under the topic "Windows operating system" (Mikhaelis 2014). At the same time, the students write out the translation of the keyword "mouse" and its word combinations (mouse pointer, left mouse button, right mouse button, to click the left mouse button, etc.) from the dictionary to their workbooks, since most of the actions in the operating system involvethe use of a mouse.

After learning the terminology,the students are asked – as aform of controlled testing –to show the teacher the location of folders, files, shortcuts on the home screen of their computer and to open their properties in the menu. This way, consolidation of this group of wordsin memory takes placesimultaneously with the visualisation of icons.

3 раздел
ПРОГРАММНЫЕ СРЕДСТВА РЕАЛИЗАЦИИ ИНФОРМАЦИОННЫХ ПРОЦЕССОВ

3.1. Операционная система Windows

NEW! Найдите в словаре слова и словосочетания и сделайте перевод на родной язык:

Операцио́нная систе́ма	По́лное и́мя фа́йла	Окно́
Рабо́чий стол	Переименова́ть папку	Закры́ть окно́
Интерфе́йс	Переименова́ть файл	Сверну́ть окно́
Графи́ческий интер-	Тип фа́йла	Разверну́ть окно́
фе́йс	Расшире́ние и́мени фа́йла	Пане́ль зада́ч
Файл	Копи́ровать па́пку	Гла́вное меню́
Па́пка	Копи́ровать файл	Пуск
Па́пка с фа́йлами	Перемеща́ть файл	Конте́кстное меню́
Созда́ть папку	Перета́скивание	Спи́сок
Созда́ть файл	Перета́скивание объе́кта	Раскрыва́ющийся
Путь	Перетащи́ть и оста́вить	Раскрыва́ющийся
Путь до́ступа	Ярлы́к	спи́сок
Путь до́ступа к фа́йлу	Пиктогра́мма	Элеме́нт
Сво́йство	Сочета́ние кла́виш	Диа́логовое окно́
Сво́йства фа́йла	Комбина́ция кла́виш	Спра́вка
И́мя фа́йла		Спра́вочная систе́ма

Figure 3. New words under the topic "Windows operating system" in the Russian language, followed by the assignmentto translate them into the native language

The execution of some types of homework involves memorising new Russian words and checking thereof at the next lesson. For instance, testing the knowledge of new words under the topic "Windows operating system" involves answering the following questions:

1. Show the home screen.
2. Show folders on the home screen. Name the properties of a folder.
3. Show files on the home screen. Name the properties of a file.
4. Show shortcuts on the home screen. Name the properties of a shortcut.
5. How do we create a folder?
6. How do we create a file?
7. How do we create a shortcut?
8. Name file extensions.
9. How many characters is it possible to use in the file name and folder name?
10. Name (show, write down) the characters that may not be used in the file name and folder name.

Having recorded and memorised the new words on the topic "MS Word window" and having received explanations from the teacher, the students should be able to answer the questions that involve associating these terms with on-screen objects:

1. What is the name of the first line of the MS Word window? What does it contain?
2. Show the ribbon.
3. Show the tabs.
4. How do we minimise/extend the ribbon?
5. Show the groups of commands.
6. Show the shortcut bar.
7. Show the rulers.
8. How do we remove/return the rulers?
9. Show the scroll bars.
10. Show the slider box.
11. Show the window control buttons. What is the name for them?
12. Show the cursor.
13. Show the scale ruler.
14. Show the location of the opened file.

After studying the topic "Creating and saving files in MS Word" and after having worked with textual documents, the students should be able to answer the following questions:

1. How do we create a new file in MS Word?
2. What is the name ofa newlycreated file when we open MS Word?
3. What is the file extension in MS Word?
4. How do we open a file?

5. How do we save a file in MS Word?
6. What is the size of the file *About myself*?
7. What is the date and time of the creationof the file *About myself*?
8. How do we save a file under a different name?

Thus, the new words and expressions gradually enter the learners' short and long-term memorywith each new lesson andwith each exercise of a series (Bogatyreva, Rumyantseva 2013); foreign students begin to understand the teacher's Russian speech as well as the assignments and test questions formulated in the textbook.

As a result, working with computer science vocabulary, foreign students learn about 380 words and expressions during the course.

Table 1. Number of new words and expressions under the topics of the discipline "Computer science"

Subject	Number of words and expressions
Presentation of information in the computer	30
Configuration of the personal computer	45
Basic techniques for working in the Windows operating system environment	45
MS Word text editor	120
MS PowerPoint programme for making presentations	10
MS Excel spreadsheet processor	60
Fundamentals of algorithmisation and programming	70

Conclusion

The task of a teacher nowadays is to teach students to process the received information competently, to assimilate it more easily and quickly, thus promoting motivationfor learning and increasing theeffectiveness of lessons. It is particularly difficult to teach foreign students whose vocabulary is limited. Nevertheless, the teachers of Russian, and other subjects that are taught at the preparatory department of the university, are always in search of new techniques and methods that help them to successfully teach vocabulary to theirstudents. However, this work will be particularly fruitful if the teacher is fully aware of the role and importance of thediscipline as a necessary component in the overall process of acquiring and enriching the Russian language vocabulary of their students, which allows the latter to acquire a sense of self-confidence that is truly requisite in a foreign culture.

Although the psycholinguistic peculiarities of foreign students' acquisition of computer science vocabulary are not considered in this paper, the addressed issue is worthy of attention, as believed by the authors. It may form the basis for our further research.

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