

## ENGLISH LANGUAGE IN RADIOPHYSICS

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### NEEDS ANALYSIS AS A BASIS FOR IDENTIFYING A COURSE STRATEGY

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The necessity of designing a new foreign language course or updating an existing one arises from changes in societal needs on the one hand, and the development of new approaches to language teaching on the other hand.

In very broad terms both aspects are supposed to be reflected in the State educational standard for teaching foreign languages in high school, a document based on the official assessment of the role of foreign language competence in the labor market and common for all non-linguistic universities. However, for every university there should be specific requirements for language teaching depending on the targets of the university curriculum and considering its subject area and career perspectives of the graduates.

Very often, the inefficiency of a foreign language course turns to be a result of unrealistic or inadequate goals set in the language curriculum, which do not take into account the requirement for language skills of the students of a certain university.

Thus, it becomes clear that one of the most fundamental aspects of the course designer's task is to gather the information about the needs of particular learners the course is intended for. Just as in the business world, market research has become an essential ingredient for commercial success, so in course design, the needs analysis stage is an imperative prerequisite for effective decision-making regarding identifying a course strategy and formulating goals.

In our case the task of developing a new foreign language course in the Architectural and Civil Engineering university emerged first of all because of the changes in the university curriculum, which resulted in the shift of emphasis from ESP to general language teaching and caused a heated discussion among the staff about the share of ESP and its necessity in the course at all.

Besides, the availability of a large number of authentic course books couldn't but influence the teachers' views of methodology as well as the contents of teaching materials and brought about a lot of disagreement, regarding the topics and situations to be included into the foreign language course.

To get an objective answer to all these questions and thus to establish the basis for designing the language curriculum, it was necessary to get some factual information from the "consumers" of the "product", i.e. the people who benefit from the course: the students, the postgraduates and the heads of the university faculties whose responsibility is to develop curricula for their divisions.

To carry on needs analysis two kinds of questionnaires were designed.

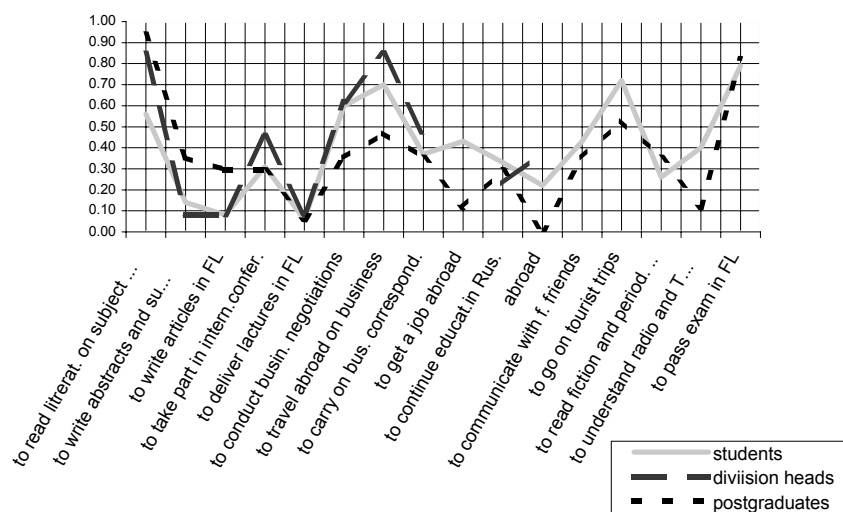
**1. For students and post-graduates**, including the questions about: their purpose of learning a foreign language, the target situations, where they think it might be most important to use language, the topics they would like to discuss at the lessons; the proportion of ESP in the foreign language course;

**2. For the heads of the university divisions**, with the aim to find out their outlook on the points mentioned above.

More than 140 students of different specialties, 20 post graduates and 13 division heads were questioned in the course of survey and the results turned to be rather interesting and somewhat unexpected for us.

Unfortunately space restrictions do not let us present here all the data obtained, so we had to choose the most revealing graph to show.

Figure presents the respondents' views of the purposes of learning a foreign language (FL) and indicates that most of them associate the need in FL with business sphere of future professional life, like business trips, negotiations and business correspondence on the one hand, and reading texts in their subject specializms. However, tourism language is of some interest too.



Mention should be made that all the other graphs reflect the same trend.

The general result of full graphs set survey has led us to two important conclusions. The first one is that we cannot restrict our course only by teaching business language. Obviously there should be a sensible balance between general, business and a certain amount of specialize language. The second conclusion is that needs analysis proved to be an efficient tool for getting factual information about foreign language learners in order to design an up-to-date, well-balanced course, tailored to their particular needs.

## ON THE PHENOMENON OF VARIABILITY IN MODERN BIOPHYSICAL TERMINOLOGY

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One of the main objectives in teaching students English language is to help them in mastering the terminology, which is necessary for reading and comprehension of scientific authentic materials, to achieve their proficiency on the subject. Learners' incompetence, ignorance of semantic structures leads to restricted usage of terms in speech, making it inanimated and less professional.

Since the problem of variability is the problem of distinguishing between synonyms and variants of one and the same word, under discussion shows the examples of lexical, morphological, and phonetical variants selected for the students vocabulary of biophysics. Here we agree with those terminologists who consider synonyms to be signs diverse in form and similar in their meaning, that reflect one and the same phenomenon of life; variants are semantically equivalent units in the given field, they possess similar substituting elements in the domain of expression.

Hence, we could refer to the following English terms such lexical variants as:

"scattered" – "diffused light"

"light-demanding" – "light-requiring"

"exploring electrode" – "active electrode"

As well as Russian terms as:

"трансцеллюлитный транспорт" – "трансэпителиальный транспорт",

"межфазовый потенциал" – "поверхностный потенциал",

"скачкообразное поведение" – "сольтаторное поведение",

"базальный тонус" – "миогенный тонус". (It is the word-determiners expressed by nouns, adjectives and participles that vary in the above examples).

In some cases, as for instance in Russian, one of the word-determiners can be considered as borrowed from English:

"градальное колебание" – "медленное колебание"

"параметр солюбилизации" – "параметр растворения в воде"

"сольватированный элемент" – "окруженный молекулами растворителя элемент"

Lexical units may also cause "lexical variants" structurally and semantically different from their initial form (a word or a phrase) via the graphical isolation of the abbreviation, i.e.:

"Фкс" – "форма, поглощающая красный свет" (R).

"rep"
"ret"

 > "Roentgen-equivalent physical" (E) – "физический рентген-эквивалент" (R).

Also we can observe a new word formation from its initial form to the proper name (i.e. symbols and abbreviations interwind in author symbolics), i.e.:

1П (1Пуаз) – единица Пуазейля,

1Д (1 Дебай) – единица Дебая. (R)

Since terminologists distinguish 3 kinds of variability at the “phonographical level”, i.e.:

- 1) purely phonetical (occurs rarely),
- 2) purely graphical (occurs rarely),
- 3) phonographical (the most spread within the level).

The following English terms as “aging method” – “ageing method”, “photocinesis” – “photokinesis” we could refer to “graphical variants”, whereas “radiogram”, “radiograph” can be considered as “phonographical” ones.

Variants at the “morphological level” are distributed as follows:

- 1) phonomorphological (i.e. linked with the phonetical variability of the affix or the word itself);
- 2) lexico-morphological (i.e. word-building synonymous affixes interchange);
- 3) morphological abbreviation (In cases like this morphemic abbreviation often presents graphical abbreviation that is typical for communication in a written form).

In that way, we could refer to “lexico-morphological variants” such English terms as: “viscous properties” – “viscid properties”.

As well as Russian terms as:

“система Доннана” – “доннановская система”,  
“длина Дебая” – “дебаевская длина”.

Examples of the morphological abbreviation include such English term as “electrocardiogram” and Russian terms: “радиопроектор”, “электрофорез”, “БЛМ” – “биомолекулярные мембраны”.

#### *Conclusion*

Thus, the interchangeability effect should be put into practice in teaching scientific terminology process. On the one hand the equivalent aspect is apparent among linguistic phenomena. On the other hand the lack of convergence in Russian and English languages both result in inaccurate and sometimes complete misunderstanding of the words. We think that specialized vocabularies associated with the subject area could include variants to enlight students on modern trend patterns in science.

### **TEXT SCANNING AND PLANS WRITING**

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Scanning is the skill characterizing a well-trained reader. The aim of scanning is to decide whether the material is of interest. In any text we should define the topic of it, the aim, the degree of information novelty. The speed of reading is approximately 500 words per minute. This type of reading is characteristic of the advanced level of studying because it demands the reader to have a high reading qualification and to operate a great quantity of language material.

To train this skill of reading authentic texts are selected. The reader should know not only logical-compositional structure of special texts but also general organization and

structure of the texts most frequently used in this sphere of science. This is the first stage of studying.

Teachers use different assignments for mastering this skill e.g. 4-5 minutes are given to sum up the main idea of the text in a sentence. The students may be given several questions and asked to find out whether the answers to these questions may be found in the text. If there are some italicized words in the text the students should pay special attention to them. To define the logical connection between different parts of the text different means of cohesion (lexical and grammatical) are studied.

After making the decision that the given text is worth studying we should define the aim of further work with the text under consideration. In case we come to the conclusion that it is necessary to know the text in details and be able to reproduce it we arrive to the necessity of plan writing.

Plans may be different in form: they may be represented by statements or questions; sentences, word combinations or separate words. The main principle is that they should be the carriers of the main information. One of the assignments in teaching plans writing may be dividing the text into logical parts, finding key sentences in each part, finding key word combinations in every key sentence, specifying key word in each key word combination. Plans writing are especially useful in making summaries and writing annotations.

As these assignments are included both in the 2nd year students and candidate examinations scanning and further plans writing seem to be rather important.

For instance, when the 2nd year students work at the topic "free time" they are given some additional texts containing the information about Theme Parks located in different countries of the world.

Some of the tasks for skimming and further plan writing may be as follows: 1. Choose the best title for the text (4 or 6 different titles are suggested). 2. Several statements are given. The students should skim the text again and mark the statements as true or false. 3. The students are supposed to use the information from the theme parks text and to complete the raffle entry form prepared by the teacher. The entry form may contain 4-7 questions (it should not be too long and complicated) the answers to which are to be found in the text. The answers to the questions may contain the key information about each park and to some extent help the students to write a plan.

The main demand to the texts is that they should be of interest to the students and possess either scientific or educational value.

## **EDUCATIONAL TECHNOLOGIES: THEIR STATUS**

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The purpose of this report is to address three questions. First, what is the current status of educational technologies? Second, what are the strengths and weaknesses of such technologies? Third, how can available technologies be used effectively and efficiently?

Two facts are known about the application of technology to education. Regardless of how well intentioned and potentially useful technological innovations are, they will be greeted with skepticism, criticism and fear. Furthermore, it takes a long time for technological in-

novations to become a regular part of educational practice. Both of these facts apply to two of the more modern technologies: television and computers.

Like everything else, television and computers have weaknesses and strengths. Some programs and software emphasize memorization; some are more entertaining than educational. Sufficient programs often are not available. Consequently, access to the technologies becomes a reward rather than an integral part of the overall instructional program.

On the positive side, however, the various technologies provide unique educational opportunities and experiences. For example, the technologies give student a common set of experiences that they normally would not have. Both television and computers are so to say attached from the realities of classroom life. As a result, they can be used to introduce important but sensitive topics. Furthermore, students find technologies to be rather fair: television does not hold grudges based on yesterday's performance; computers do not attribute mental deficiencies to students who frequently make errors.

Despite these potential benefits, neither television nor computer is widely used in educational institutions. In many cases, it's simply a matter of insufficient funds. Also, because of the rapid development of these technologies it is difficult to decide what and when to buy. Purchasing second-generation equipment just as the third is arriving on the market is expensive and frustrating. Finally, time and effort typically unavailable to administrators and teachers are needed to sort through the variety of hardware and software available before informed choices could be made.

Educational technologies must be incorporated into the overall educational program to be effective. The purpose of a particular videotape or computer diskette should be made clear to students when it is used. After its use, some type of summary is helpful. Finally, because the information included on videotape or a diskette is massive and densely packed, multiple uses might be suggested.

Some recommendations concerning the use of technologies can be give to teachers. First, availability and use of these technologies must be increased. Second, teachers need time to explore the available technologies and consider their appropriateness and utility. Third, the roles and responsibilities of students in terms of various technologies must be clarified: "passive receptivity" must be replaced by "active participation" if students are to benefit from the given technologies. Finally, careful planning and implementation strategies are needed for the technologies to be maximally effective.

### **EXTENSIVE VOCABULARY WORKING DOING UPPER-INTERMEDIATE COURSE**

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The purpose of this paper is to reveal the importance of extensive vocabulary work in teaching English to advanced students of the Radiophysics faculty. The paper focuses on the ways systematic lexis development contributes to the effective language learning and on how it is organized in Headway Upper-Intermediate Course.

Generally, the students of the Radiophysics faculty do Pre-Intermediate or Intermediate course, which entirely meet the learners' interests and demands. However, there have

always been some groups with high language ability that should be provided with more extensive teaching. (Most of the students in such groups come from Lyceum № 40 and have a profound knowledge of English.)

At this level the students are aware of the need to enrich their vocabulary, both active and passive.

In this respect, we consider Upper-Intermediate to be the most suitable textbook for teaching English in such groups as it puts emphasis on extensive vocabulary work thus giving the students the best opportunities of increasing their vocabulary store.

In doing Upper-Intermediate the students of advanced groups are taught different ways of acquiring new vocabulary – formal and informal.

In Upper-Intermediate there are many pre-reading and pre-listening exercises introducing new words. But unlike those in Pre-Intermediate and Intermediate these exercises are more challenging and creative. For example, in Unit 8 dealing with descriptions of people and things our students divide the following words describing objects into three groups: shapes, material and colour.

circular purple  
gold oval  
gray triangular  
rubber round  
cotton crimson  
cylindrical rectangular  
nylon silver  
straight iron  
glass navy blue  
wooden square  
metal maroon  
scarlet turquoise

Then they mention the things that can have these shapes and colours or are made of the materials above. And finally the students are encouraged to describe an everyday object without giving a name to it so that other students could guess what it is. The students find such exercises exciting as they let them use their imagination and life experience. More than that, the work is taken as a game.

Lexical assignments in Upper-Intermediate are integrated in all language activities: speaking, reading, listening, and writing.

Thus, the exercise mentioned above is helpful in comprehending the text about Cardiff, the capital of Wales and further in writing a description of a town.

One of the advantageous features of Upper-Intermediate, from our viewpoint, is that alongside with the traditional methods of defining the meaning of new words (by using the system of affixation, conversion, formation of compound nouns) the course provides quite new interesting ways not to be found in other levels: by studying homophones and homonyms, synonyms and antonyms, idiomatic expressions. The students are usually rather enthusiastic about learning the meanings of idioms, as they perceive them as a part of “real language”. But they cannot be understood from the individual words. To find an idiomatic expression in the dictionary you must decide what the key word is. In Unit 9 the

students identify a key word in the expressions doing with relationships between people and after finding the idioms in the dictionary they paraphrase them in non-idiomatic English. For example, “We are like chalk and cheese” means “We are completely different” where “chalk” is a key word. The same way they learn the meanings of the phrases:

It was love at first sight.  
Patrick and Jenny get on like a house on fire.  
She really gets on my nerves.  
He’s tied to his mother’s apron strings.  
She wears trousers.

Upper-Intermediate students also benefit from doing matching and gap-filling exercises represented both in the Student’s Book and in the Workbook. Thus, in Unit 3 “Jobs and professions” they learn English proverbs dealing with work by matching the beginning of the proverb with its end:

- | A                          | B                        |
|----------------------------|--------------------------|
| a) A bad workman           | a) spoil the broth       |
| b) If a job is worth doing | b) catches the worm      |
| c) Make hay                | c) it’s worth doing well |
| d) Too many cooks          | d) blames his tools      |
| e) The early bird          | e) while the Sun shines  |

After that the students are asked to interpret the proverbs and give their Russian equivalents. Such vocabulary work is intended to enrich the students’ vocabulary store, develop their speaking skills.

Although the formal ways of vocabulary acquisition are given considerable attention in Upper-Intermediate it still gives priorities to the formal way i. e. using the context as at this stage the students are so well educated that they are capable of deducing the meanings of unknown words via context clues.

We consider the contextual method to be the most effective way of acquiring new vocabulary subconsciously and consequently rather quickly. That is why, reading is paid much attention to in Upper-Intermediate.

For instance, examining the context of the article “Allen is a little disaster” referring to the topic “Seven ages of man” (Unit 2) provides the best help in guessing the meanings of the words: *to crack off*, *to sew back*, *to plunge*, *to chop off*, *to donate*, *celebrity*. So the students have no difficulty in understanding the whole text.

Thus, in our opinion, extensive vocabulary work is of utmost importance for the students with high language level. It provides the increase of their productive and receptive vocabulary encourages the development of all language skills and, finally, it helps the students to feel confident in the subject.

We highly appreciate Upper-Intermediate Course for it gives all the opportunities of successful language learning.



## **A NEW CURRICULUM – NEW TEACHING MATERIALS**

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Changing times inevitably bring about new demands and new goals in education in the developing society. This, in its turn changes the approach to teaching-learning foreign languages process. Nowadays a communicative approach, highly appreciated by the majority of experts in teaching English language methods, has found a wide practical implementation. This approach aims to enable learners to use a foreign language for their own purposes.

Mention should be made that profound studies of the problem and thorough statistical analysis of the learners' needs made by our colleagues from the State Architectural and Civil Engineering University, on the one hand, and the results of our questioning of the radiophysics postgraduate students, on the other hand, testify to the fact that the students of both Universities prefer to learn English for successful communication with foreigners in the sphere of their future profession and also for communicating with people abroad in everyday situations, while visiting other countries. The most popular needs mentioned by the students are as follows:

- to communicate with colleagues (scientists) from different countries;
- to have their works published in foreign journals;
- to communicate with people abroad;

It is interesting to note, by the way, that the new Federative Standard for teaching foreign languages at Higher School gives recommendations and quite definite requirements for each level of education. And these are also concerned with practical usage of the language in both: professional sphere and in everyday situation. No doubt, each situation will make its own demands on learners' communicative resources. But all the demands, at the same time, imply one important ability of the learner – general communicative ability.

So it is obvious that the most urgent task facing the English language teachers of non-linguistic Universities nowadays is updating or developing new, proficiency – based curricula for all the learner levels, with the main goal being the development of the skills needed to use language for both specific purposes and in everyday real situations. Furthermore, when a new curriculum is developed there appears another urgent task – it should be supplied with the appropriate new teaching materials.

Taking a full benefit of the communicative approach we have tried to develop the new curricula for the students of radioscience of the first and second educational levels at the University, i.e. for the junior students (the first- and second-year students) and the senior ones.

This paper is concerned with the curriculum and its supporting materials for the junior students only, as currently there are and there have always been some problems in teaching- learning English process in the first year of studies at the Radiophysics Faculty. The point is that every year there are about 40% of newcomers to the faculty who did not learn English at school. The situation in the groups of “beginners” may be spoken of as a

“deadlock”. According to the academic schedule of the faculty all the “juniors”(both “beginners” and “advanced”) are to take their exam in this subject at the end of the second year.

For many years we have been in search for the way to help the beginners in mastering English to some appropriate level for 2 years (with only 4-hours of classes a week). It seems we failed in doing so, because we did not have any suitable manual to favor teaching “beginners”.

That is why, having developed an up-to-date curriculum for those students, we are making efforts to compile a students’ book aimed at meeting the requirements of the curriculum to train the necessary skills in using ESP (English for specific purposes) and general English.

The manual “English for Beginners” is designed as an intensive course to last about 3 semesters for the beginners to progress to a pre-specified level and that is Pre-Intermediate. The intensity of the course is achieved due to thoroughly chosen teaching material (both lexical and grammatical) and early adaptation to the specific language of their specialties. But highly specific materials are avoided. The chosen special texts are rather of a popular-science character at the beginning of the course, while those closer to the end deal with some important problems and phenomena in modern science, such as “The Role of Experiment in Science”, “Computers in Use”, etc. Another advantage of the manual is that it represents the basis for teaching “everyday English” in parallel with ESP.

So, what can beginners find in this manual?

1. The emphasis on early communication (the majority of exercises are of communicative nature).
2. Early start of dealing with the special terminology.
3. A realistic beginners’ syllabus (they can see they will manage to do what advanced students are able to).
4. It integrates the four basic skills.

In conclusion it should be said that the manual has already been successfully used in some groups of the beginners at the Radiophysics Faculty. The learners have shown their ability to perform properly in all the four skills (although reading for comprehension is the most important, from our point of view).