Development of professional communicative competence of IT-students through learning foreign language for specific purposes

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ABSTRACT: In solving the problem of improving the quality of higher technical education, special attention has been paid to the development of engineers' professional competence, consisting of cultural, social, linguistic and humanities components. In this context, learning English for Specific Purposes (ESP), which enables students to adapt quickly to new challenges of academic and professional communities, is becoming very important – provoking interest and not just among university teachers. In this article, the historical background of ESP study is presented, its development as a branch of applied linguistics, and potential areas for further investigation. The aim of this article is to sum up the world's experience in order to define basic criteria that can be the foundation for ESP course design. The ultimate purpose is to introduce the model of an ESP course developed at Tomsk Polytechnic University (TPU) to IT-students.

INTRODUCTION

An onrush of information and communication technologies and expansion of international relations have caused the globalisation of engineering education. The actual professional capacity of an engineer implies not only professional knowledge, but also a number of social-humanities skills, which are *alternative* for an engineering education and fall into the category of *soft skills* while forming the social-humanities competence of an expert. The significance of social-humanities competences is set forth in the criteria of the international engineering boards and organisations that provide accreditation for engineering education programmes and certify the level of educational attainment of their graduates (e.g. ABET, FEANI, ASTIN, ENAEE, CEAB and the Association of Engineering Education of Russia).

Currently the qualifying standards made by employers of engineering graduates directly refer to their ability to work in a diversified team; the possession of methods of effective argumentation; realisation of professional communication; comprehension of professional and ethical liability of engineering decision-making; and critical analysis of decisions made, with flexibility in a variable economic, social and political environment [1].

In view of the above, it becomes obvious that engineering universities will reconsider their educational policy and, thereby, eventually abandon traditional approaches to teaching engineers, such as narrow-purposed teaching, targeting a labour-market of only one country, and discontinuity of education processes. To fit the times, as in educating a highly qualified engineer, *the university shall develop and introduce such training courses which would promote development of the extra professional-orientated abilities of the students* [2]. Among these abilities can be, for example: self-education, critical or lateral thinking, self-discipline, professional communication. From the writers' point of view, the course of professional foreign language communication is likely, partially, to tackle the above issue.

LITERATURE REVIEW

In Russia, the concept of professional foreign language teaching or, as it is generally accepted, English for Specific Purposes (ESP) is rather new and scantily investigated, although globally, the given methodological tendency as an area of applied linguistics has been developing from the late 1960s. The original interest of the ESP movement resulted from general developments in the world economy at that period. The developments implied the growth of science and technology, the increased use of English as the international language of science, technology and business, as well as the increased number of international contacts and education programmes.

In the literature [3-8] many abbreviations were found that have been used in describing professionally-orientated teaching of a foreign language, terms such as: English for Academic Purposes (EAP); English for Occupational

Purposes (EOP); English for Vocational Purposes (EVP); English for Professional Purposes (EPP); English for Business Purposes (EBP); and English for Specific Purposes (ESP).

In order to avoid misunderstanding among scientists who carried out research in this field, in the methodology, there was an attempt to break out two main directions of professionally-orientated teaching of a foreign language: thus, they have become English for Academic Purposes (EAP) and English for Specific Purposes (ESP). The first recorded use of the term English for Academic Purposes (EAP) appeared in the 1970s in the works of American and British scientists (R.C. Yorker, J.B. Heaton, T.F. Johns), who retained the emphasis of teaching English on practical skills required for study purposes in formal education systems [8]. Historically, ESP was dominated by the teaching of EAP because most materials and research work were carried out in the area of EAP. Only since the 1980s *ESP has become a vital and innovative activity within the Teaching of English as a Foreign or Second Language movement* [4].

One can look at three definitions of ESP found in the literature, and then, based on them an understanding of this notion will be built up, in order to make a methodological foundation for the proposed model of ESP teaching at the technical university [5-7].

The first definition was produced by Hutchinson and Waters in 1987. They suggested that the foundation of ESP is the simple question: *Why does the learner need to learn a foreign language? The answer will determine the language required and the learning context, and thus establishes the primacy of need in ESP. Need is defined by the reasons for which students are learning English, which can vary from study purposes to work purposes: applying for an academic exchange programme or participating in business negotiations* [5].

Another definition of ESP was offered by Strevens in 1988, who provided four absolute and two variable characteristics of this notion. The absolute characteristics are that ESP consists of English Language Teaching, which is:

- designed to meet specified needs of the learner;
- related in content to particular disciplines, occupations and activities;
- centred on language appropriate to those activities in syntax, lexis, discourse, semantics, etc;
- in contrast with *General English* [6].

The variable characteristics are that ESP:

- may be restricted as to the learning skills to be learned, for example, reading, writing, speaking;
- may not be taught according to pre-ordained methodology [6].

The third definition of ESP proposed by Robinson was also focused on the primacy of a needs analysis, which *aims to specify as closely as possible what exactly it is that students have to do through the medium of English* [7]. She mentions homogeneous classes as another characteristic of ESP in terms of the work or specialist studies that the students could be involved in.

However, each definition has validity but also weaknesses because none of them can be considered universal and can cover all aspects of ESP teaching. Strevens' definition is the most comprehensive of the three quoted, but it can lead to a certain confusion among teachers, providing a false impression that *ESP is always related directly to a subject-content* [3].

As experience shows, not only a subject-content plays the main role, its role is much less in comparison with the professional environment, situations and activities typical to the discipline it serves. The next confusion is connected to homogeneity in classes, promoted by Robinson. In reality, it is difficult to achieve, mainly for reasons that in the context of one major there could be several specialist studies. Moreover, no definition reflects the nature of the interaction between the ESP teacher and the learners, but meanwhile this feature can differentiate ESP teaching from General Purpose English teaching. Traditionally, in ESP classes the teacher acts more like a language consultant, emphasising the equal status with learners who have their own expertise in the subject matter.

In this article, ESP cannot be considered as just a set of specific themes or topics; specific vocabulary directly related to subject-content; or specific language skills such as reading, writing, etc. The ESP course should reflect structural characteristics of the learner's special purposes and should be geared to the specific needs of the target situation. The choice of register, genres and associated language will depend on situations, which students need to manage when carrying out the activity.

STANDARD REQUIREMENTS FOR IT-SPECIALISTS

When designing the structure and content of an ESP course, account should be taken of the global goals of engineering education that reflects the requirements of international engineering associations and the social demand of society towards the experts of a particular engineering field. In this article, an attempt is made to reveal the features of ESP teaching to IT-students at Master's level.

These very experts will be involved in the following areas: automation and control, computer systems and engineering, applied mathematics, networks architecture and telecommunication. Acting in accordance with the professional educational state standards of the Russian Federation, it was stated that a number of professional skills and abilities a specialist must possess are:

- the readiness to participate in all stages of product development;
- ability to use advanced methods, tools and technologies to solve problems in the professional activity;
- ability to collect, process, analyse and synthesise information when solving professional problems;
- ability to work with professional technical literature and other scientific information in order to get awareness of recent achievements in the IT industry and to obtain advanced professional knowledge;
- ability to organise interdisciplinary team-work;
- ability to evaluate accumulated experience, analyse own capabilities to update knowledge by means of modern information technologies and to weigh up challenges of new scientific and social environments [10].

The content of an ESP course should be designed with focus on the development of the skills and abilities mentioned above, otherwise the disharmony between the goals of the education and its content can demotivate students, and could result in knowledge that is impersonal and out of context [9]. Besides, foreign language is now regarded as not only a tool of professional communication but also a tool to extract professional knowledge. A good command of the English language by IT-students implies the development of additional focused professional skills which, in authors' opinion, can be:

- self-management and self-education skills that can be applied in independent students' work, with different sources to collect necessary information;
- general scientific skills focused on study strategies development;
- management and creative skills applicable to team-work;
- critical or lateral thinking that implies the ability to analyse the result or the product and to find the alternative and non-standard way for problem solving.

Students' focused professional skills can be formed and developed on the basis of general-purpose skills. The efficiency of their development will depend on the organisation and the content of the courses offered to study. Taking into account the aforesaid, ESP is considered a foundation for professional skills development.

DESIGNING THE ESP COURSE MODEL FOR IT-STUDENTS

Taking into account the relevant experience of ESP study in domestic and foreign methodology, the attempt here was made to design a model of an ESP course and its content that meet, optimally, students' needs; the characteristics of the professional field; the requirements of the state educational standard of the Russian Federation and the standards of international accreditation engineering boards mentioned above.

Development of the course structure implies consistency and correlation of the common objective-subordinated and result-orientated theme units. In this case, the objective of the course is as follows: improvement of a level of the foreign language communicative competence of IT-students for their professional career. The projected outcome of professionally-focused training will lie in formation and development of general and focused professional skills of IT-experts.

In order to determine the needs of IT-students in ESP learning, a survey was carried out with a target group. The survey was restricted by the questions related to students' *necessities*, *lacks* and *wants* in an ESP course. By *necessities,* it is implied that the *information a learner has to know in order to function effectively in the target situation, for example, lectures, seminars in English, etc, and the discourse components and linguistic features commonly used in them, for example, functions, structures, vocabulary* [8]. *Wants* mean a learner's motivation in the learning process and usually imply what a learner wants from the course. *Lacks* represent *the gap between the target proficiency and that which a learner knows already* [10]. In other words, lacks analysis is the analysis of deficiency in a learner's knowledge.

Thus, the aforesaid points seem relevant and should be taken into account in the development of an ESP course structure and teaching material. A survey questionnaire was conducted among 48 Master students of Tomsk Polytechnic University, Computer Science and Engineering Department. The objective of this survey was to determine key positions in the course developed, such as which subject is going to be studied, at what level, the language necessary for this, as well as which study situations and study skills are relevant to the students. A list of questions is presented below:

1. What do you need English for?
2. What does ESP mean to you?
3. What do you expect from the ESP course?
4. What language skills do you want to develop in order to communicate professional issues effectively?
5. What language issues do you need to improve, and for what purpose?

The survey results are shown below in Table 1:

Table 1: The results of students' *needs* analysis in an ESP course.

Answers to the questions	Answers (%)
Question 1	
for participating in international conferences and other events	22%
for taking part in international projects	35%
for getting a job in an international IT-company	43%
Question 2	
special language (vocabulary) for the professional sphere	52%
special communicative situations that can occur in future professional life (negotiations, making presentations, small-group discussions, etc)	48%
Question 3	
ability to communicate in English on professional issues	73%
ability to write scientific papers	27%
Question 4	
writing	45%
reading	10%
speaking	25%
listening comprehension	20%
Question 5	
professional vocabulary	54%
technical translation	21%
technical writing	20%
grammar	5%

According to the results of the survey questionnaire, the following conclusion can be drawn that the balance between academic skills, study skills and subject-content should be observed in ESP teaching. In the existing ESP models (Dudley-Evans, R.R. Jordan), it was found that the following separate blocks interconnected with each other indirectly (Figure 1) [3][8].
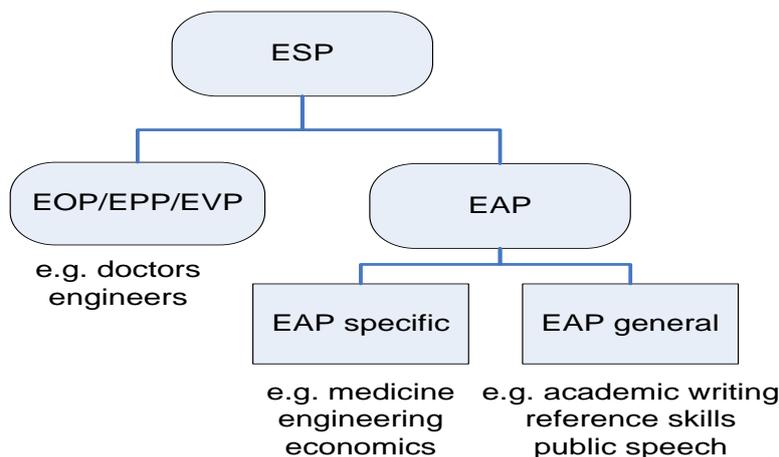

Figure 1: ESP course composition.

However, ESP teaching should not be considered a separate subject-content study. As mentioned above, the professional activity of the IT-specialist includes oral and written communication, participation in international projects, and formation of self-work strategies that can be a tool in acquiring professional up-to-date knowledge. Therefore, it was proposed that the alternative approach to ESP course development was carried out, when the focus was on the ESP tasks (project and research exercises, text-analysis, discourse and genre analysis, technical vocabulary) but the EAP components (academic writing, reference skills, listening and note-taking) were also included as a parallel course or as a part of the whole course, so each subject-content unit could be integrated with EAP components according to *needs*, *lacks* and *wants* the students feel.

This approach to teaching ESP allows the building up of individual paths of learning that enable students to construct professional knowledge and develop the academic and study skills on their own. Figure 2 shows the specific IT modules offered for study and the academic skills that could be applied for study and professional purposes.
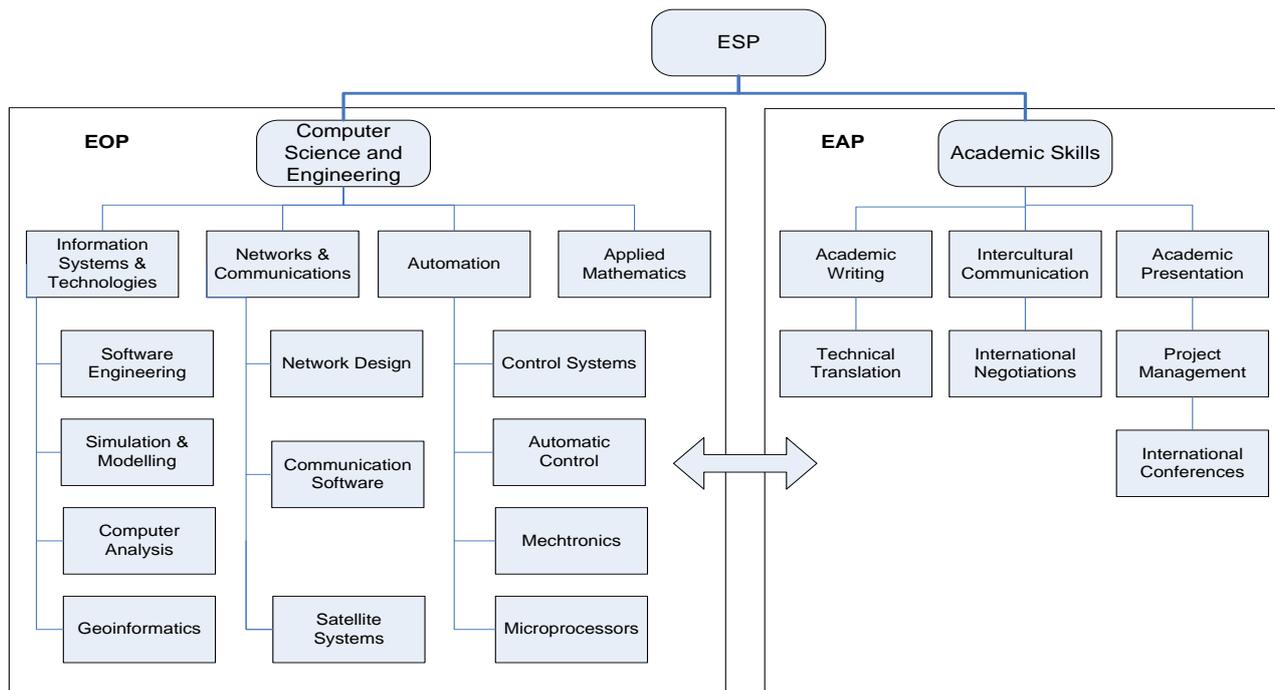

Figure 2: The model of the ESP course for IT-students.

CONCLUSIONS AND RECOMMENDATIONS

In this article, a case study was introduced which aims to improve the level of ESP teaching in technical universities. Highly developed communication skills in English enable future engineers in the IT sphere to be in demand, not just in their home country but all over the world, because of expansion of international contacts in science, technology and industry. To achieve efficiency in teaching professional communication, the technical universities need to review the traditional approaches to ESP teaching, as well.

A specially designed model of the ESP course for accounting students' needs and interests, satisfying domestic and international requirements can increase the professional competence of IT-specialists. The development of the course should be based on strong collaboration between the subject specialists (IT-experts) and the language teachers. The English teachers need to gather information about a student's subject course, how English fits into their course and what the department and students see as priorities.

Also, it is very important to establish the balance between the department's expectations and the students' wants. The teaching material for the ESP course should be selected by the IT-experts, and then composed in the form of different communications exercises by the English teachers.

The material may not run in parallel with the subject course. So the content should be revised but can include new knowledge and ideas not taught in the subject course. This article states the position that the ESP course should be compulsory for technical students and needs both its general components (EAP) selected individually by students according to their *lacks* and *needs*, and its specific component reflecting the actual way the language is used in the professional sphere.

The experience of TPU teachers in this field may be considered relevant, but it should be taken into account that it may require further improvement. The proposed model was designed in team-teaching with the IT-experts and the language teachers of the university (TPU). It was launched as a pilot project in the current academic year (2009–2010) at the Computer Science and Engineering Department.

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