Solving of a Technical English Tuition Problem through Information Technologies

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Abstract - **Because of huge differences which exist between Serbian and English grammar and language in general, translation of professional texts often presents a problem to students who are inexperienced or unprepared. That is why some key differences and features closely related to translation are carefully "treated" during the course. One of the most common problems is proper understanding and translation of nominal compounds, consisting of two or more nouns ordered in such a way that the preceding noun(s) define(s) the last one acting as adjectives. In order to improve the translation of nominal compounds, a short online course has been created as an accompaniment to regular, classroom lessons, involving different (mostly online) applications to be used for different purposes (lessons, exercises, tests, evaluation). The paper will discuss the practical use of such applications, as well as their roles and behaviour within the course.**

Key words - Technical English, ESP, tuition, nominal compounds, e-learning, information technologies.

I. INTRODUCTION

The English language has definitely turned into the communication standard of the world during the globalization process that took place during the second half of the twentieth century and later, as a language necessary for performing everyday jobs, assignments and duties. For the persons connected with various branches of engineering, computer science or information technologies, through education, job or private life, the situation is even more serious. Namely, it is truly necessary for them to possess certain knowledge of English, both to understand the terminology of certain field of science and to stay actively in touch with technical and professional literature, establish different kinds of international cooperation and present the works and achievements to a wider scientific environment on a global level. The Internet shall be added to that, as the global information and communication service available to everyone, which is, in spite of the localization which has been performed thoroughly in recent years, still a creation initially made in the English language and, as such, it offers a dominant number of information in that language.

Everything that has been stated leads to a necessity of paying special attention to the English for Special Purposes (ESP) tuition at technical faculties. Here is the curriculum model in use at the Faculty of Electrical Engineering in East Sarajevo, where English is taught through first four semesters. Following the logical "path" from general to peculiar, the curriculum is created in stages, so that the students at first have a chance to deal with or renew basic elements of English grammar, vocabulary, speaking and writing, and then to face and work with real technical texts from a close field of scientific and professional interest. That is done at first on the level of getting familiar with words, phrases, collocations, characteristic semantic and syntactic structures, and later on the wider level of discourse contents organization, cohesion and coherence. At the same time, there are efforts in enabling the students to write various forms of professional and technical texts (abstract, summary, report, review, description, analysis, presentation preparation, CV, job application, motivation letter etc.). A part of teaching time is also dedicated to enabling the students to translate technical texts from English to Serbian and vice versa, together with introducing them to some general notions and concepts of translation and interpretation.

In such a way, students are given a chance to get in touch exclusively with the parts of the English language to be necessary in their further educational, scientific, research and professional work [1].

In the realization of a program planned in this way, there are some difficulties and problems that cannot be avoided. Among them, probably the most difficult one is the uneven and unbalanced degree of previous knowledge with which the students – freshmen come to a faculty, what goes from excellent knowledge to absolute ignorance. In most cases, such ignorance is caused either by learning of other foreign language instead of English during the elementary and secondary education or by inadequate and insufficient efforts at English lessons in elementary and secondary school.

According to the fact that the English language at technical faculties is, in a way, treated and observed not only as a foreign language but as a necessary part of general education and profiling of a future academic citizen – engineer, it is very important to perform a quick equalization of knowledge in such a way that they are enabled to attend the tuition and access the exams based on a unified criterion.

Such equalization presents a true challenge for teacher and students, and the existing number of lessons per week in most

cases does not leave enough room for it. Insertion of some extra lessons during a week (in accordance with regular schedule of other subjects), for the students who need it is a regular practice, but in many cases that is not enough. Because of that, there is a constant need for finding new methods and ways for helping the students in learning English, outside the framework of regular tuition and load per week, that is in time reserved for extracurricular activities and learning outside the classroom.

There is also a problem embodied in the fact that "traditional" periodical testing, performed in defined time intervals during an academic year, is often neither sufficient nor precise enough for a teacher to be truly aware of knowledge, skills, understanding and problems that might occur in every particular student. On the other time, it also takes much time on the teacher's side to collect, correct, comment and evaluate particular papers and to keep record of the results [1]

II. Use of Technology in Solving of Specific ESP Problems

If a situation occurs in which a period of classroom time should be dedicated to the solving of a specific, ESP related problem, a good practical solution is the creation of a short course in which traditional classroom lessons will be combined with new technologies embedded in different interactive lessons and exercises available to students online and/or offline, for the purpose of studying and testing. One such course will be described in the text that follows, with a special emphasis on the tools used for creation of interactive materials.

The target group (learners) are the students who study English Language 4 at the second semester of their second year at the Faculty of Electrical Engineering. The group consists of 25 - 30 students in the age from 20 to 22.

The lessons last for 1 semester, 15 weeks, 90 minutes per week. Most of the work is performed in a classroom equipped with a laptop, OHP and the Internet connection. Two "official" books are used as a source of course materials, together with numerous extracurricular materials taken from the Internet or various professional books and magazines. Most students have their laptops and PCs at home/the place they stay during study, and free Internet is available 24/7 within the faculty. Many students also have smartphones.

The course goals are the gaining of practical skills in technical English, including discussion on professional topics on an advanced level, writing shorter textual units on specific professional topics, translation of professional texts from English or from students' mother tongue, writing abstracts on scientific papers (summarizing) and, finally, preparing and making of a public oral-visual presentation on a certain topic.

The syllabus of English Language 4, being a final semester in a 4-semester course starting with basics of general English vocabulary and grammar, through the English in general science and ICT to the true electrical engineering English, with the students' initial knowledge of English greatly equalized within the first three semesters. Due to the fact that English is, essentially, the main language in all spheres of technology and engineering, the students study English in order to be able to establish and run a professional conversation and information exchange, both in written and oral form, to be able to read, understand and translate texts from professional literature and to be capable of writing grammatically correct professional papers and presentations.

Because of huge differences which exist between Serbian and English grammar and language in general, translation of professional texts often presents a problem to students who are inexperienced or unprepared. That is why some key differences and features closely related to translation are carefully "treated" during the course.

One of the most common problems which emerges in working with the mentioned group of students is their proper understanding and translation of nominal compounds, consisting of two or more nouns ordered by the "left hand rule", i.e. in such a way that the preceding noun(s) define(s) the last one acting as adjectives [2], [3]. The problem is based on the fact that the Serbian language does not allow the creation of such compounds, so they are not familiar with similar concepts in their mother tongue. Another thing which makes this even more difficult is the treatment of cases, which completely differs in English and Serbian (in Serbian, there are different suffixes for noun in (seven) different cases, while in English most case relations are established with the help of prepositions). In nominal compounds the situation is even worse: there are no prepositions but the meanings have to be guessed on the basic of bare logic or previous experience.

In order to improve the students' translation of nominal compounds, a set of online exercises and tests has been created where the students have a chance to practice the translation of nominal compounds through decompounding and paraphrasing, i.e. the initial nominal compounds would be decompounded and turned into a paraphrased expression in which the relation between nouns is determined by proper prepositions. Such an approach would be a new thing to students and the decompounding itself would be made visually simpler and more intuitive by the use of computers (instead of traditional, oral or pen-and-paper approaches to the problem), and such a visualization should lead to better understanding of concepts and logic of translation.

In the realization of such a set of exercises and tests, two online-based tools have been used - one for exercises and the other for making of final test. For exercises, HotPotatoes 6 package (https://hotpot.uvic.ca/) has been chosen as a free, intuitive and very efficient set of tools for making exercises to be published as web pages (html documents) [4], [5].

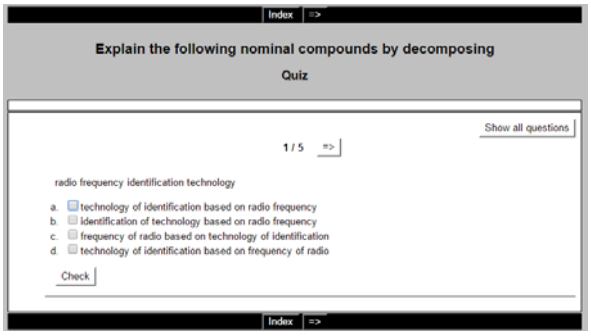


Figure 1. Multiple choice exercise made in HotPotatoes

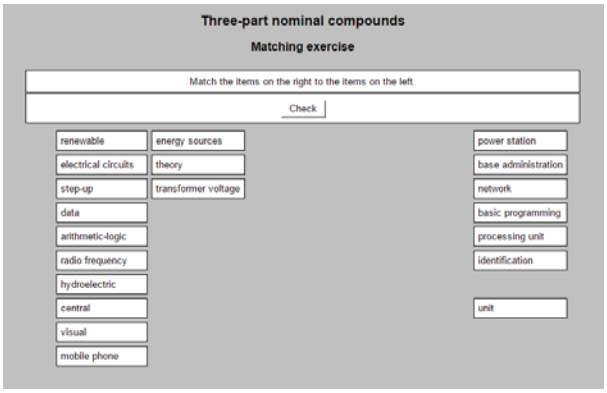


Figure 2. Matching exercise made in HotPotatoes

For the final test, a free online test generator Testmoz at https://testmoz.com has been selected a great solution. It enables a fast and efficient creation of online tests consisting of the combination of four possible indirect test units (types of questions): Multiple Choice, True/False, Multiple Response, Fill in the blank, with a full control of other parameters, such as points per answer, displaying of correct answers during or after the test etc. After a test has been published, it is given a unique URL. By clicking on the URL, a user can register as a student (simply by typing the name in the box or by typing both the name and a passcode - it depends on settings established by the admin) or as admin (by typing the password chosen at the creation of the test in the box). The admin is given a full access to tests, as well as to detailed graded reports on the students' achievement [6], [7]. The groups of questions, realized with the selection of appropriate question types, will be organized in the following order:

1. Decompounding of two-component compounds
2. Decompounding of three-component compounds
3. Decompounding of more-than-three-component compounds:
4. Translation of two-component compounds into Serbian;
5. Translation of three-component compounds into Serbian;
6. Translation of more-than-three-component compounds into Serbian.

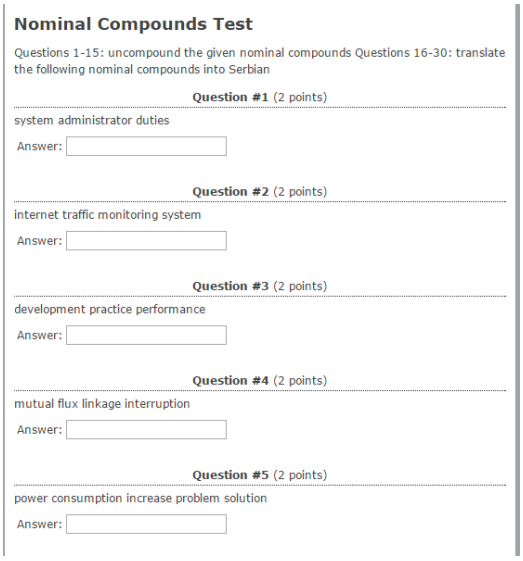


Figure 3. Test made in Testmoz

The goal of the technology tool is to visualize and simplify the process of decompounding of nominal compounds through the medium of a PC and thus contribute to students' better understanding of the topic and its key features.

As the final "products" of the course, an interactive PowerPoint presentation with embedded exercises made in HotPotatoes as interactive web pages has been created. The presentation can be downloaded as a .zip package (containing all the documents and files embedded in the presentation) at http://goo.gl/E0Vp9y.

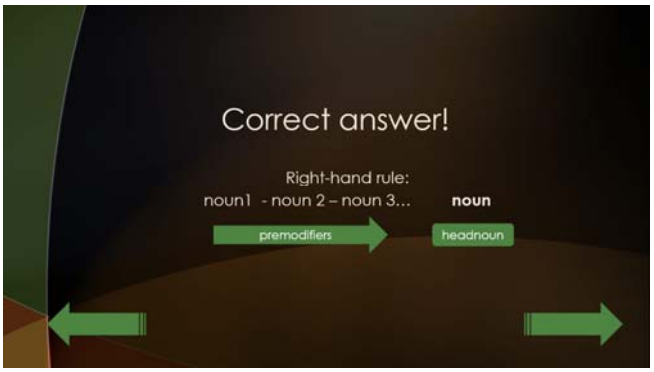


Figure 4. Slide from the presentation

The second thing created is an online test available at https://testmoz.com/339009. The passcode is etf123.

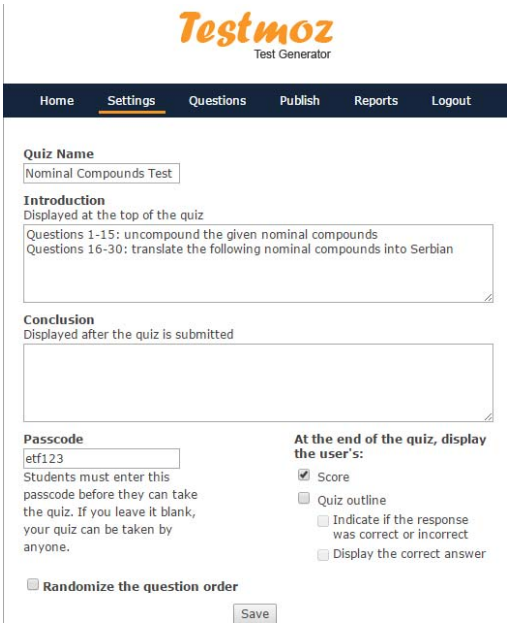
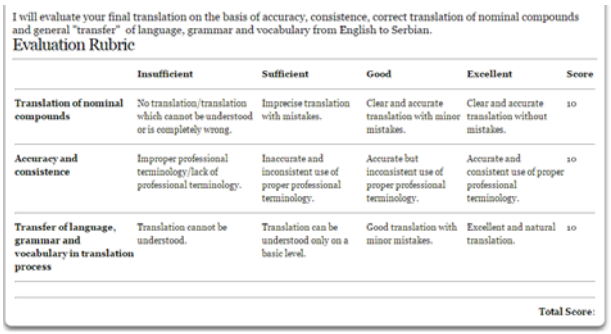


Figure 5. Test administrator interface in Testmoz

The exercises embedded in the presentation will be used for practice during classroom lessons and as homework to be done in extracurricular time, to be performed in the first week of technology implementation (third week of project implementation), while the test will be used for testing of students in the computer lab, to be performed in the second week of technology implementation (fourth week of project implementation) (see the timeline below!). All the correct answers in the test will be awarded with 2 points, what makes the maximum possible total of 60 points as 100%.

Also, the entire course will be introduced to students by means of Zunal - a web-based software for creating WebQuests, with the quest available at http://zunal.com/webquest.php?w=251866. The evaluation of the final students' work (translation of technical texts) will also be done on the basis of the rubrics included in the Zunal quest (http://zunal.com/evaluation.php?w=251866), and the students will get their results 48 hours after they have done the translation.


I will evaluate your final translation on the basis of accuracy, consistence, correct translation of nominal compounds and general "transfer" of language, grammar and vocabulary from English to Serbian.

Evaluation Rubric

	Insufficient	Sufficient	Good	Excellent	Score
Translation of nominal compounds	No translation/translation which cannot be understood or is completely wrong.	Imprecise translation with mistakes.	Clear and accurate translation with minor mistakes.	Clear and accurate translation without mistakes.	10
Accuracy and consistence	Improper professional terminology/lack of professional terminology.	Inaccurate and inconsistent use of proper professional terminology.	Accurate but inconsistent use of proper professional terminology.	Accurate and consistent use of proper professional terminology.	10
Transfer of language, grammar and vocabulary in translation process	Translation cannot be understood.	Translation can be understood only on a basic level.	Good translation with minor mistakes.	Excellent and natural translation.	10
				Total Score:	

Figure 6. Rubrics - evaluation table made in Zunal

The implementation of the technology tools will be integrated into the central part of the English Language 4 in the period of 5 weeks) with 90 minutes of classroom teaching and (planned) 90 minutes of students' extracurricular work every week. A detailed course plan can be seen in the table that follow.

TABLE I. COURSE PLAN

Course Plan		
Week	***Content***	***Steps of implementation of technology tool***
1	Introduction to linguistic differences between English and Serbian technical discourse which affect understanding and translation. Notion of nominal compounds.	
2	Types of nominal compounds. Nominal compounds in technical English. Interpretation and translation of nominal compounds. Decompounding and paraphrasing. Avoidance of nominal compounds.	
3	Nominal compounds - exercises. After a detailed review of what has been learned on nominal compounds, the students will be given examples of various nominal compounds to (in the form of interactive exercises created with HotPotatoes and embedded within a PowerPoint presentation). After instructions, they will be asked to decompound and paraphrase them on their own and, after paraphrasing, to translate them into Serbian. They will be given 40 minutes to do that. After they have finished, the results of decompounding and translation will be discussed within the classroom, and the correct answers will be shown to students.	Some of the exercises created with HotPotatoes will be used in the classroom (embedded in a PowerPoint presentation) as examples and material for classroom work and discussion. However, the students will be given another set of exercises (in the same form - PowerPoint presentation sent to students' e-mail addresses) to be practiced and done at home, within their extracurricular time, as a sort of homework, and self-evaluated (due to the fact that correct answers are shown at the end of each exercise).
4	Nominal compounds - test. First part of the lesson (45 minutes) taking part in the classroom: Review of the exercises done as homework and appropriate discussion. Instructional preparations for completing a Testmoz-based test. Second part of the lesson (45 minutes) taking part in the computer lab: The students will do a Testmoz-based test on nominal compounds within 45 minutes and with expected passing grade of 75%.	The students will do a Testmoz-based test. The test will be done online, in the faculty computer lab. The students will be informed about their results immediately upon finishing the test. At the administration side, the teacher will get a detailed report on their results.

5	Nominal compounds – translation. After the analysis of test results, the students will be asked to do a written translation of two technical texts from professional literature containing nominal compounds from English into Serbian (300-400) words each. They will have 60 minutes to do that. The texts are available at http://goo.gl/j2Ucd9. The classroom computer with dictionaries and the Internet connection will be at their disposal. The translation will be evaluated on the basis of the rubrics available at http://zunal.com/evaluation.php?w=251866, and the students will get their results 48 hours after they have done the translation.

III. CONCLUSION

By approaching the problem through the computer-based exercises, being something up-to-date and close to them, the students are expected to show more interest in dealing with the topic and be better motivated for solving the problems through practicing, what should improve their translation skills as a final result. All the examples of nominal compounds have been taken from authentic vocational and professional technical literature in English. The students can do the exercises at home, within their extracurricular time, while the final test will be done during a lesson, in the faculty computer lab. Although most students possess an advanced knowledge in ICT, they will be instructed in detail on accessing, completing and submitting a test before they really start doing it. On the other hand, the tools used for creating materials are both easy and intuitive to be used, as well as the made with them.

The overall impression and effects are expected to be positive, as well as the results – i.e. through the conducted technology enhanced activities the students will be able to understand, interpret and translate nominal compounds much better what that will further contribute to the improvement of their overall translation skills and improvement of their general skills in professional communication.

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