

Scientific and Technical Translation Training of Non-Linguistic University Students in E-Learning Environment

Inna Gubanova^{1*}, Anastasia Shirokolobova¹

¹T.F. Gorbachev Kuzbass State Technical University, Foreign Languages Department, 650000 Kemerovo, 28 Vesennya st., the Russian Federation

¹T.F. Gorbachev Kuzbass State Technical University, Foreign Languages Department, 650000 Kemerovo, 28 Vesennya st., the Russian Federation

Abstract. Contemporary concepts and methods of teaching students scientific and technical translation in an electronic learning environment (Moodle) is highly relevant. The methods of scientific and technical translation teaching in the electronic environment, presented in this article, allow to organize and individualize learning activities of students, in accordance with fields of their future professional activity. They also help form and develop students self-education skills, which are especially important when the classroom work is reduced and the amount of students' independent work increases. Professionally oriented teaching of scientific and technical translation in an electronic environment is a modular integrated approach, which includes teaching how to work with the terminology of their future professional activity. This approach improves skills of scientific articles reading and writing, drawing up reports and presentations in a foreign language, teaches independent research skills in the framework of a future professional activity. The method of scientific and technical translation teaching in an electronic environment is based on a combination of cognitive, interactive and communicative teaching methods. The training purpose is the development of a future professional personality ready for professional activity, possessing necessary communication skills in his native and foreign language, capable to self-development and self-learning.

1 Introduction

Language training efficiency of students has always been in the spotlight of scientists and methodologists. They have developed various aspects and ways to ensure quality of higher professional education (Collins, A., Halverson, R., Higgins, John, Hewson J.) [1-3]. Nowadays concepts of professional communication training, scientific and technical translation training and creation of students' motivation have been developed by (Lourdes Martínez Cartas, Baeten, Marlies & Dochy, Filip & Struyven, Katrien, Wallace M.J., Chokwe J.M.) [4-7]. In response to the demand of the integration into the global

*Corresponding author gubanova_inna@mail.ru

professional community, the effective language training especially in scientific and technical translation of future specialists is increasingly becoming more and more pertinent. Such researchers as Bédard C., Bowker L., Cronin M., DePalma D., and others devoted their works to this issue [8-13].

Today training students and teachers of technical higher education institutions in the scientific and technical translation is a relevant task since they have to use professional terminology, technical texts, etc. in their professional activities to be aware of scientific developments and share their own researchers with their colleagues round the world. Therefore, students and teachers of higher technical education institutions realize the value of scientific and technical translation in their current and future professional activity. They would like to read and translate articles and research papers in the field of their research activity, to publish their own research reports in international research scientific journals, to participate in scientific conferences and have opportunity to work and study in advanced higher education institutions all over the world.

It should be noted that concepts and methods of scientific and technical translation training in the in the electronic environment (in our case the Moodle system is used) have not been created yet [14]. Translation training in e-learning environment allows to organize and individualize educational activities of students, depending on the field of future professional activity, forms and develops self-education skills, in our opinion, it is especially important because of the transition to a three-level system of education, reduction of classroom work and increase of independent students studying.

The aim of this paper is to present an integrated modular method of scientific and technical translation training in e-learning environment (Moodle) created for students of higher technical education institutions.

2 Experimental part

A modern graduate of a higher technical education institution should be a professional having sufficient knowledge of a foreign language for professional speaking, writing, reading of relevant research reports and publishing his own research reports and articles in international scientific and research journals [15]. The professionally focused training in the scientific and technical translation in e-learning environment is a modular integrated approach which includes both training in special vocabulary and terminology in the future field of students' professional activity and basics of scientific articles / reports reading and writing. Students are also taught basics of research and scientific paper writing, reports writing and making presentations in a foreign language in the field of their future professional activities.

The technique of scientific and technical translation training in e-learning environment is based on a cognitive, interactive and communicative methods combination in the e-learning environment.

The aim of the training in e-learning environment is a personality formation ready to future professional activities, having essential communication skills in their mother tongue and a foreign language, capable to self-development and independent studying. The educational and methodological support provides a complex of interactive exercises and tasks, video lectures, interactive mid-term and final tests, the questionnaire system on the bases of Moodle platform.

The main selection criteria of training materials for the scientific and technical translation course are their relevance and authenticity for the future professional activities field of students and customization. At this stage, foreign language teachers cooperate closely with teachers engaged in research and development activities and teachers working in industry who know what vocabulary and terminology is essential in their activity field.

The pilot project e-course “Scientific and Technical Translation” was developed in the e-learning environment on the Moodle platform and has been implemented at the foreign languages department of T.F. Gorbachev Kuzbass State Technical University from 2016 to 2019 academic years. 157 students of Chemical Engineering, Oil and Gas Technologies Institute took part in the experiment.

Scientific and technical translation training in e-learning environment is carried out on the modular interactive approach and consists of 4 stages.

The first stage is realized in the Basic module (Fig. 1), where students are trained in translation of grammar structures and general engineering terminology. It should be noted that scientific and technical language is a part of general language; nevertheless, it has a specific style and a number of special peculiarities such as terminology and grammar structures.



Fig. 1. Basic module.

At this stage of scientific and technical translation training in e-learning environment, students’ basic thesaurus is formed through the translation training of grammar structures and basic terminology. To identify properly the concepts expressed by technical terms students use their knowledge of science and technology they study at university. Besides there are special training techniques for technical vocabulary: terms can be introduced topic by topic or in a context and further can be used in different types of activities that help memorize them.

The series of consecutive exercises aimed to memorize terms are based on the cognitive approach that promotes assimilation of new units, but not rote memorization. We consider the integration of the following exercises for introduction of new terms into an electronic course to be the most efficient:

- suggest students writing down definitions of new terms;
- suggest students creating mental maps on the topic;
- suggest students making up sentences with new terms;
- suggest students making diagrams of one semantic group terms;
- do mini-tests in the electronic environment to check vocabulary, keep test time limited;
- use situational cases and short videos (5-10 minutes), connected with future professional activities.

Vocabulary exercises should be based on texts or videos given and their level of difficulty should be gradually increased – from simple to more complex, terms should be introduced in texts or real life situations.

While training students in e-learning environment it is essential to organize their interaction at forums and chats using both pair and individual work to give them opportunity to communicate in a foreign language, share their ideas and solve problems. At the end of every topic, students should participate in case studies based on their future professional activities, allowing using the vocabulary learned in situations close to reality. Therefore, students assimilate terms in a foreign language, their definitions, collocations (with verbs, nouns, adjectives and prepositions) and grammar structures.

The second stage is realized in the General engineering module in e-learning environment (Fig. 2). Students learn vocabulary suitable for different types of engineering activities, for example, “Dimensions, units of measurement”, “Equipment and tools”, “Health and safety requirements”, “Manuals”, “Materials”, “Parts of things / Components and how they are put together” etc. Students learn grammar structures, abbreviations, positive adjectives, modal verbs, nouns, adjectives and verbs with opposite meanings connected with science, research and technology, for example: turning on /turning off, loose / tight, switch on / switch off, etc.

General Engineering Module

To be a good professional engineer, always start to study late for exams because it teaches you how to manage time and tackle emergencies.
Bill Gates

Task 7.1.

Quote of the theme 7.

Task 7.2.

Fig. 2. General engineering module.

Training of scientific and technical texts reading in e-learning environment begins in the second module when students have already mastered main grammar and vocabulary structures of scientific and technical texts. At first, students read and translate only headings, titles and keywords of articles given, going on with abstracts and summaries; they read, suggest ways of translation and define the main idea. It is necessary to discuss all variants of translation suggested by students and choose more precise, accurate translations in comments at forums.

The next step is translation of articles conclusions. All students' translations are posted on the forum for further comparison and analysis. The following step should be devoted to translation of schemes, drawings and charts captions. The final step is the translation of the article. The article should be read, analyzed paragraph by paragraph up to the end. Students' translations of each paragraph should also be discussed at a forum. The teacher also posts his / her translation to give students a model they can compare and analyze their

translations. On the basis of each article students make their thematic glossary where they include terms / phrases and even whole sentences they need to describe technical or scientific processes. When translation is completed, the article should be analyzed in general: structure, logic of presentation and translation adequacy. Then students are asked to write an abstract to the article translated in a foreign language (main idea of the article, examples proving that idea). When translation is finished students should post their glossaries to the article translated on a forum, thus students can compare their own glossaries with other glossaries and add some words, terms, phrases etc. Articles for translation in a foreign language are selected taking into consideration students' professional interests, students are also asked to find articles for translation themselves.

At the third stage each students begin to deal with their personal research and development material according to professional field of training: enlarge, systematizes their individual glossaries and at the same time learn to work with electronic translation services like <https://www.lingvolive.com/ru>, <https://www.translate.ru/>, <http://context.reverso.net>, <https://translate.google.com/>, <https://www.multitran.ru/>, etc. Students analyze the work of modern tools of technical translation; get acquainted with their advantages and disadvantages.

Work is conducted in two ways: firstly, they translate professional vocabulary on a word-by-word basis, secondly, they translate professional vocabulary in phrases, and then in sentences. The final step is translation of paragraphs and short texts. This stage is based on the individualized approach to professional vocabulary, whereas the technology of work with each student is the same. The words or terms, which have been translated with electronic translation services, are checked by means of various search engines for an accuracy and frequency of mentioning and further it becomes a part of students' individual glossary posted on a forum of a course or in a student's private office. All words and terms are peer reviewed by teachers and other students, thus students interact not only with their teacher, but also with each other and therefore having an opportunity to control the regularity of the translated lexical material, and finally students can to improve skills of verifying of their own translation accuracy.

The fourth stage is an individual project. In this module not only the teacher, but also students select texts for translation in a foreign language and start writing abstracts, summaries to final theses etc, prepare reports and presentations for scientific conferences etc. So, the e-course helps integrate graduates into their future professional activity therefore considerably facilitates assimilation of lexical units and translation process because students know technical processes in practice and can apply knowledge in practical future or current (if they already work) professional activities.

Original texts, students translations and glossaries are posted on a forum in order that all students could participate in the analysis of translations made by fellow students, to have an opportunity to suggest own way of translation if they know a more accurate one. This peer reviewing develops students' analysis of translation adequacy skills, ability to reveal and correct lexical, stylistic inaccuracies and as a result increases a quality of future professionals.

3 Conclusions

As a result, the experiment carried out at the foreign languages department of Kuzbass State Technical University in 2016 to 2019 academic years provided the following data:

1. 76% of students trained translation in e-learning environment got 85-100 points out of 100 for a course. Replying to the final questionnaire, they said that the course structure and the tasks definitions were clear and e-learning environment had provided comfortable tutoring, since all the tasks were provided in files that had considerably simplified the tasks.

2. 17% got 60-84 points out of 100 since failed to meet the deadlines and did not fulfill the tasks systemically, only the day before level testing, or even only before a final testing.

3. 7% did not fulfill any task (login was not fixed).

4. 57% (out of 100%) of respondents noted that the interactive tasks gave the opportunity to see what lexical and grammatical units they had accurately translated at once that would not be possible without electronic environment; it would take some time for the teacher to check. Besides, they had an opportunity to improve their result if considered them poor at any time and also to see their progress in comparison with other students.

5. 67% of respondents noted that a seminar in e-learning environment gave an opportunity to make an objective assessment of their work results, to compare own translation with other students' translations and to get more accurate translation. At the same time, 90% noted that such type of activity increases confidence and motivates to further translation work.

6. 63% of respondents noted that by means of peer assessment in "Seminar" and interactions at forums the communicative principle of tutoring is implemented; it allows to maintain skills of communication in a foreign language in writing as it is necessary for their future professional activity.

7. 90% of respondents noted that it was very important that they could deal with the texts they were interested in.

8. 80% of respondents appreciated the possibility of making up a glossary in e-learning environment where they can add terms they need and use for translation in their future professional activity.

Summing up we should emphasize that the technique of scientific and technical translation training in e-learning environment should be developed to fit different fields of research and development. The main idea is to make it useful for translation in different fields of research; that means to give students opportunity to make up individual glossaries they can use in their further professional activities for reading and translation in a foreign language and help them create a flexible system of knowledge, develop skills of reasoning, creative approach and life-long self-development. Only in such way student' information perception and communicative competences of the relevant technical language knowledge can be created and developed.

Thus, while training students in professional research and development and technical translation in e-learning environment, it is better to use modular approach and pay attention to the sequence of materials to learn in modules. Modules should be constructed on the principles of informative continuity and linguistic development; the specifics of students' professional activities and training terms should also be taken into consideration. The usage of original and relevant materials for training closely connected with students' professional environment help develop students' reading, comprehension and translation of technical texts skills.

References

1. A. Collins, R. Halverson, *Journal of Computer Assisted Learning*, **26:1**, 18 (2010)
2. Higgins, & John. *Language Learning*, **16:2**, 102 (1983)
3. J. Hewson, *Procedia - Social and Behavioral Sciences*, **10**, 269 (1982)
4. Lourdes Martínez Cartas, *European Journal of Engineering Education* **37:3**, 1 (2012)
5. M. Baeten, F. Dochy, K. Struyven, *The British journal of educational psychology*. **83**, 484 (2013)
6. M. J. Wallace, *A reflective approach*. (Cambridge: CUP, 2004)
7. J. M. Chokwe, *Mediterranean Journal of Social Sciences*, **4**, 14. 377 (2013)
8. C. Bédard, *Traduire*, **186**, 41 (2000)

9. L. Bowker, *Meta*, **46** (2), 345 (2001)
10. L. Bowker, *Computer-aided translation technology: A practical introduction* (Ottawa, Canada: University of Ottawa Press, 2002)
11. L. Bowker, *Corpus-based applications for translator training: Corpus-based approaches to contrastive linguistics and translation studies* (Amsterdam, the Netherlands: Rodopi, 2003)
12. M. Cronin, *Translation and globalization*. In C. Millán & F. Bartrina (Eds.), *The Routledge handbook of translation studies*. London (UK: Routledge, 2013)
13. D. DePalma, N. Kelly, *Translation of, for, and by the people*. Lowell, MA: Common Sense Advisory. Gile D. *Basic Concepts and Models for Interpreter and Translator Training*. (D. Gile. Philadelphia: John Benjamin Publishing, 2008)
14. W. Rice, *Moodle E-Learning Course Development: A complete guide to successful learning using Moodle* (Packt Publishing, 2011)
15. C. Schäffner, *Translation in Language Teaching Versus Teaching Translation*, 117 (1998)