TRANSLATION TECHNOLOGY AS CHALLENGE IN EDUCATION AND BUSINESS

TEHNOLOGIJA PREVOĐENJA KAO IZAZOV U OBRAZOVANJU I POSLOVANJU

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Abstract

Translation technology has largely influenced the research, education and profession. Translation services are growing sector, asking for adequate education including language competences, interpersonal, intercultural and technological competences. Market needs for the translation business in Croatia and in EU have influenced curriculum changes. In the paper, the research on the use of translation technology is presented, among students of information sciences and/or language study groups, analysing their interests in the use of translation technology. Evaluation of language resources and tools for Croatian and other languages is presented and inter-annotator agreement given by Fleis's kappa.

Sažetak

Tehnologija prevođenja je u velikoj mjeri utjecala na istraživanje, obrazovanje i struku. Usluge prevođenja su rastući sector, koji traži odgovarajuće obrazovanje koje uključuje jezične kompetencije, te interpersonalne, interkulturalne i tehnološke kompetencije. Potrebe tržišta u ovome sektoru su utjecale na promjene kurikuluma u Hrvatskoj i Europskoj uniji. U radu je predstavljena upotreba tehnologija za prevođenje među studentima informacijkih znanosti i/ili jezika, analizirajući njihove interese kod upotrebe tehnologije za prevođenje. Dana je evaluacija za jezične izvore i alate za hrvatski i druge jezike, te slaganje evaluatora u ocjenjivanju jezičnih izvora (Fleiss kappa).

1. Introduction

Translation technologies, often called computer-assisted translation tools (CAT tools), machine translation or computer translation, range from general-purpose applications, standard tools (spelling, grammar and style-checkers) up to specific translation tools, such as electronic monolingual and multilingual dictionaries, glossaries, terminology bases, translation memories and machine-translation software. Regardless the name, they have largely influenced the translator's profession, education and process organization. Translation technologies, creating new interdisciplinary field and lying between theory and practice, information sciences and languages, science and industry, have largely influenced the translator's education, profession and company organization. It is topic of interest of many researchers, product designers, project managers and teachers. Translation tools and resources that integrate different functions on one side, and specific tools and language resources one the other side, have become indispensable while working in team on large documentation or as single freelance translator. Apart from the professional use, translation tools have been widely used by everyday users for various purposes.

In order to use the translation technology, the translator needs to understand pros and cons of translation technologies, limits and possibilities of real use, as well as reorganization imposed by work with technology, as in Bowker (2002). In order to cope with demands for high quality translations in short time limits, translators need adequate education possessing not only language competences, but also interpersonal, intercultural and technological competences, being able to work under stressful conditions, as suggested by Directorate General of

Translation (DGT) of the European Commission.

As reported from the conference „Language & Business 2011" held in Berlin and answering the question „Are languages barriers or bridges to the international labour market?", it was concluded that „intercultural competencies are becoming increasingly important; language skills by themselves are no longer sufficient". In order to cope with multilingual communication performed in restricted time limits, use of high-quality translation tools and resources in condition *sine qua non*.

2. Translation industry

According to Zahorsky /**1**/, the language translation market is large and growing opportunity, reporting that the Federal Bureau of Labor Statistics estimates the growth of the translation market faster than the average of all occupations through 2016, where translation services include legal translation, commercial, technical translation, editing services, language interpretation and website localization.

Demands on translation services have been largely influenced by globalisation, e-commerce, raise of software localisation industry, as well as growing requirements for the translation services in the European Union institutions, multinational companies, associations, etc. The European union (EU), being a political and economic union composed of 27 member states and 23 official languages, with the tendency of enlargement, has caused the growing needs and opportunities in the translation market.

In 2010, DGT produced about 1,860,000 pages, which in 11% more than in 2009 /**2**/. DGT has also continued to facilitate and assure multilingual communication for customers and the number of pages processed for the web raised from 65,000 in 2009 to 90,000 in 2010.

Besides use of translation tools by translation professionals, translation tools are widely used in everyday communication, by various Internet users. According to the study published by Byte Level Research, „less than 30% of the world's Internet users are native-English speakers. By 2010, that number will drop to less than 25%...". Web globalization has also influenced the quality of free translation tools, available on the web. Only ten years ago, in the study reported by Ghanem/**3**/, English was mother tongue to 40% of Web users, while only several years ago English was the native language of 80% of web users.

According to Fišer /**4**/, the translation services are growing sector, especially in Europe. Due to culture and language preservation, increase of written communication and international cooperation, there is an increasing need for translation of volumes of documentation. The translation profession has undergone significant changes in education and process organization /**5**/. Document translation, integrated into the whole document production process, asks not only for language knowledge and skills, but also for competent use of information and communication technology, especially translation technology.

3. Translation in EU

Many new EU member states have faced the problem of creating infrastructure, adequate education for the translators, foreign language education for communication purpose and organisational and professional changes. That is the reason for suggesting the curriculum changes in order to achieve compatibility in theoretical, professional, and training fields. EU enlargement has raised the difficulty of recruitment of qualified translators who have to pass successfully several types of testing, having possibility to work as permanent in-house staff translator, as contractor through periodic public tenders open to individual freelance translators and agencies, or as trainee wishing to gain some professional translation experience.

The translators working for the European Commission must have perfect command of their mother tongue and at least two foreign languages (each additional language is an advantage when applying for the position), having in mind that English, French, and German are the working languages of the European Union. Translators usually translate into their mother tongue and the texts they translate are of political or legal nature, their structures are complex, and they encompass various fields of activities of the European Union, such as economics, finances, science, education, and technology.

The European Union asks for high-quality translation professionals, who besides language knowledge and skills, have to be well-informed about the economic, political, social, and cultural background of target language countries.

These requirements are to be sold in the frame of specialized training courses, but also in cooperation with universities. According to Sosoni /**6**/ the translator selection process is vigorous and challenging. Translators are offered 4,267.72 euros per month, not including extra entitlements and allowances /**7**/. After successful pass on the test translating into the mother tongue using EU specialised terminology resources (Eurodicautom, Eur-Lex, Eurovoc, TIS, etc.), candidates need to successfully pass the specialized ICT training course.

Aiming to standardize and harmonize translations, a draft of the graduate study model for the translator's profession has been settled, called the EMT (European Master's in Translation). It focuses more on translation skills and competences, while language competences should be already mastered during their undergraduate studies. The EMT program is supposed to produce a sufficient number of professional translators who meet the criteria of the European Commission, the Directorate General for Translation (DGT), and other EU institutions.

DGT indicates the needed professional competences of the translators working for EU institutions which include translation as a profession, translation theory, source text and translation analysis, intercultural communication, terminology work, information and communication technology (ICT), language culture, special terminology and languages, and translation practice (including more than one language combination).

Interpersonal competences include awareness of the social role of translator, following market requirements, planning, work under pressure and stress, how to comply with professional ethics, self-evaluation, work in team, aspects of production dimension (communication with clients, mastering metalanguage), etc.

Language competences suppose understanding of language constructions, graphic and typographic conventions, sensitivity to language changes.

Intercultural competences embrace sociolinguistic dimension (recognising function and meaning in language variations, appropriate register) and textual dimension (understanding of macrostructure of the whole document, implicit meaning, capability to summarize, identity).

Information mining competences include identification and extraction of information, use of tools (terminology software, corpora, dictionaries), document management.

Thematic competences include searching for appropriate information, developing of knowledge, reasoning methods.

Technological competences include effective use of computer-assisted translation tools, production of translation in different formats and media, knowing of possibilities and limits of machine translation.

All six interdependent competences should lead to better qualification of the translator's profession in multilingual and multimedia communication. As the most of the education process is performed in university setting, it is suggested that universities work closely with DGT in order to give students a chance to obtain knowledge and skills suitable for EU professional market. In addition to professional competences, some characteristics are mentioned, such as initiative, intellectual curiosity, preparedness to learn and professional motivation.

4. Translation process

Translation process is composed of several interdependent sub-processes and tasks, as part of the document workflow process.
According to Alcina /8/ translation technology can be classified into five interdependent categories:
- the translator's computer equipment
- communication and documentation tools
- text edition and desktop publishing
- language tools and resources and
- translation tools.

Fulford and Granell-Zafra /9/ indicate the following activities in the translation process:
- document production using text processors, presentation, graphical, desktop and web publishing software,
- information search and retrieval locating background and reference sources, including Internet search engines, electronic encyclopaedia, terminology database, corpora, electronic dictionaries, terminology management software, etc.
- translation creation process including translation memories and machine translation software
- communication with colleagues and clients including e-mail, mailing lists, online discussion groups
- marketing and work procurement – including activities for promotion of translation services, creation of web site and online marketplaces
- business management embracing client and contact data, invoicing, and financial management.

Melby /10/ points out eight types of translation tool functions:
- infrastructure – this does not have to be language specific, but gains importance especially in multilingual environment. It includes document creation and management system, terminology database and telecommunications (Internet, Intranet, e-mail, ftp, web browsing, etc.)
- term-level before translation: terminology management – including term extraction, identification and creation of database
- term-level during translation : automatic terminology look-up – displaying the preferred target language term
- term-level after translation – verifying consistent use of terminology after the completed translation
- segment-level before translation – including

preparation activities for the alignment
- segment-level during translation: translation memory look-up and machine translation – including revision of previously translated text, comparison of new translation memory. Machine translation process embraces post-editing and modification of dictionaries, if allowed.
- segment-level after translation: verification of missing segments, correction of grammar, formatting
- translation workflow and bilingual management – translation workflow being important for tracking the progress of the translation project (text modification, dates of outsourced translations, revision dates, translation priorities, etc.).

Regardless the segments of the translation process, the translation profession asks for technologically skilled person, which are to be mastered at specialized ICT training course.

5. Pilot research in Croatia

As Croatia has been undergoing the process of EU integration, there are considerable needs for the translation of significant amount of documentation: translation of „Acquis Communautaire" consisting of more than 80,000 pages from English into Croatian, then translation of Croatian legislation into English, and number of documents from multinational companies, institutes, associations, etc.

In such situation, there is absolute need for the use of computer-assisted translation tools, such as electronic monolingual and multilingual dictionaries, terminology bases, translation memories, MT translation tools, i.e. all types of assisting standard and professional translation tools. Adequate education in university setting at undergraduate and graduate levels, researches at postgraduate level and joint projects, could be valuable starting point when taking on new tasks.

Market needs for the translation business in Croatia and in EU have influenced curriculum changes. Although considerable modifications in accordance with the Bologna principles and the European guidelines have been made, it is still necessary to continue with harmonization activities to formally accept and acknowledge the translator's professional qualifications.

5.1. Results

For the purpose of monitoring students' interests in the use of language resources and their evaluation, the pilot research was conducted at the Faculty of Humanities and Social Sciences, University of Zagreb among students of information sciences and/or language study groups.

In the research 91 students participated, among which 58.2% at undergraduate and 41.8% at graduate levels. Out of the total number of students, 87, 3% of interviewed students study information sciences and language group.

Among the interviewed students, 77.3% of students have declared to have previous experience with translation, out of which 38.10% for personal and faculty needs, 49.2% professionally and 12.7% have no experience in translation, as presented by figure 1.
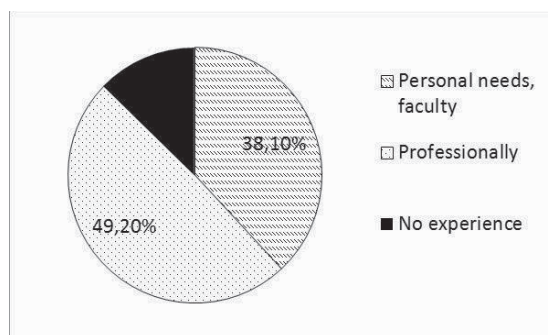

Figure 1. Previous experience in translation

77% of students declared that they have already attended one or more classes on language technologies, relating to machine translation, translation memories or language processing as in figure 2.
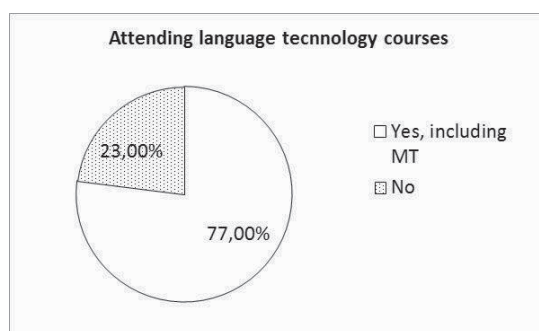

Figure 2. Attending language technology courses

Answering the question on the type of text translated by free Internet translation tool, i.e. Google Translate, which is available for the Croatian, the students gave the following answers (multiple answers allowed): 74.3% of students use it for the translation of domain specific texts (economy, law, etc.), 45.9% technology domain, 40.0% traveling, 17.6% e-mails, 5.4% conference topics and 16.2% other (homeworks, games, literature or 2 do not use it).
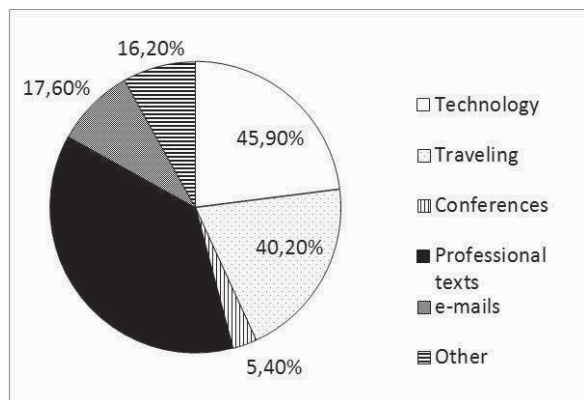
Figure 3. Types of text translated by free Internet translation tools

Figure 4 presents two types of data: current use of translation resources and tools and the ones which students would like to use in the translation process, but of suitable quality. The results do not show difference in the use of glossaries and terminology bases, while there is small difference in use of e-dictionaries (83.30% vs. 90.10%). On the other side, the highest disproportion between used tools and the ones they would like to use, is in translation memories (4.10% vs. 41.80%), professional MT software (10.80% vs. 55.70%), and other (speech-to-text system, 2.50% vs. 13.20%). The inverse range was found in the use of free translation tools (93.20% vs. 70.30%).
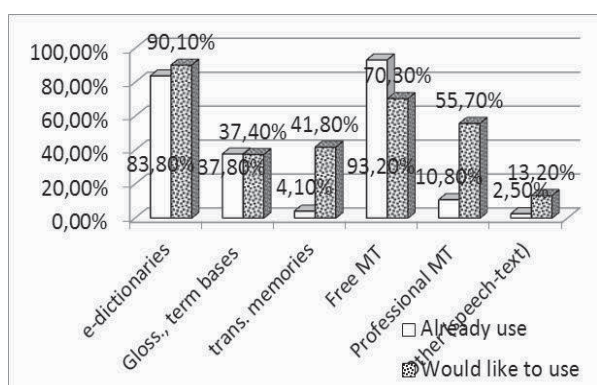
Figure 4. Use of free translation resources

Figure 5. presents average grades given to free online translation tools: Systran (3.83), Google Translate (3.66), Im Translator (3.05) and Neuro Tran (2.6). The highest average grade was given to Systran (3.83), followed by Google Translate (3.66).
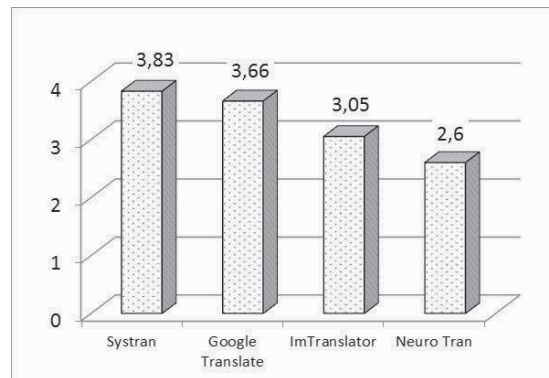

Figure 5. Average grades for free online translation tools

Figure 6 presents evaluation of various translation tools and resources for the Croatian. The highest grade was given to Google Translate (3.36), followed by e-dictionaries (3,32), while terminology bases (2.67) and translation memories (2,57) were evaluated by 1 grade lower.
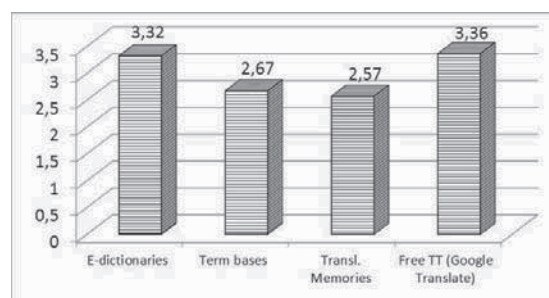

Figure 6. Evaluation of Croatian language resources and tools

Figure 7 presents the range of preferred translation tools, after having experience and using them. The most preferred tool is Google Translate by 46.15% of students, followed by Systran (28.57% of students), and the other tools (Im Translator, Dragon Naturally Speaking, etc.)
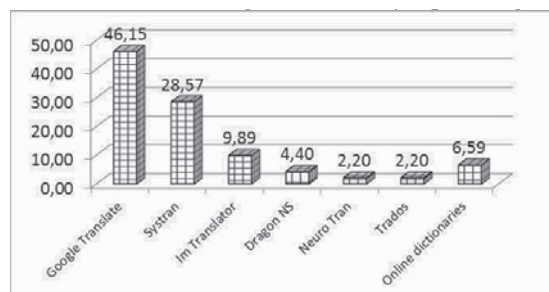

Figure 7. Preferred translation tool

Figure 8. presents average grades given to free online translation tool Google Translate (for Croatian), being the preferred free translation tool. 44.40% of participants evaluated this tool with mark good, and 41.70% with mark very good.
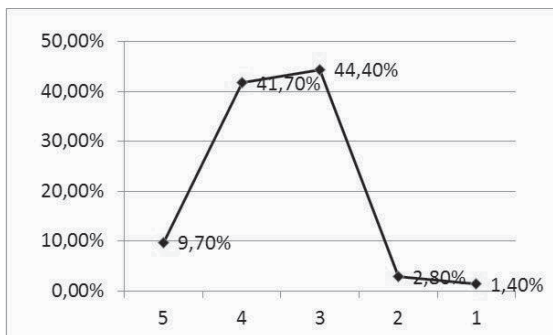
Figure 8. Average grades for Google Translate

Figure 9 presents compared average grades for language tools and resources. For various languages it was 3.36, while for the Croatian 3.10.
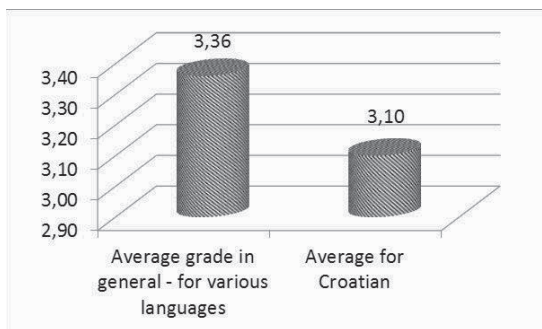

Figure 9. Average grades

Figure 10 presents distribution of grades given to language resources and tools for various tools and resources – for various languages and for the Croatian. For the Croatian language, there is higher number of lower grades – sufficient (2) and good (3), while for various language there is higher number of higher grades – very good (4) and excellent (5). For the Croatian language there is one negative grade (1), while for the others the lowest grade is sufficient.
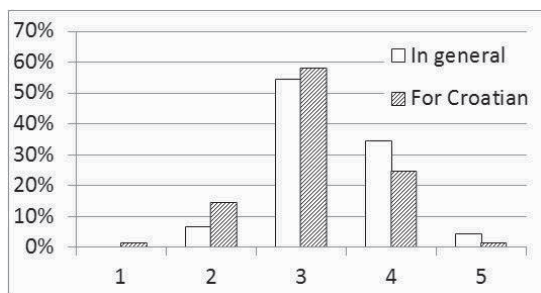

Figure 10. Distribution of grades

Answering the question on preferred way of packages of resources and tools, 8,80% of students

would like to use each one separately, 28.60% integrated in one package, while for 62.60% the most important is their usefulness.
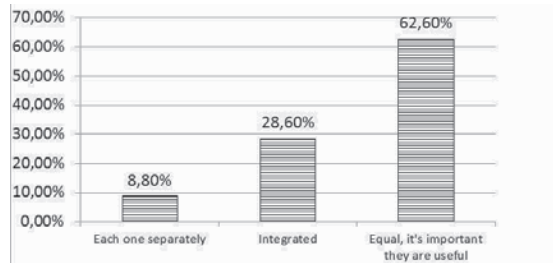

Figure 11. Preferred way of packages of resource/tools

Figure 12 presents answers on the question regarding students' interests to continue education for the translator's profession. 49.5% of students answered positively if a grant is received and 18.70% would like to continue the translator's education in any case. 31.9% of participant would not like to continue this education.
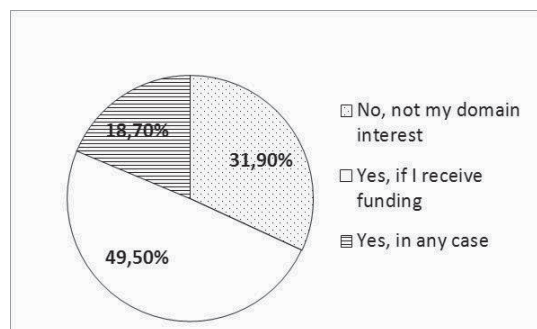

Figure 12. Further education for the translator's profession

5.2. Fleiss' kappa

Fleiss' kappa has been used for assessing the reliability of agreement among raters when evaluating translation resources and tools. It indicates the extent to which the observed amount of agreement among raters exceeds what would be expected if all the raters made their ratings completely randomly.

$$\overline{P} = \frac{1}{Nn(n-1)}(\sum_{i=1}^{N}\sum_{j=1}^{k} n_{ij}^2 - Nn)$$

The score is between 0 and 1. A value of 1 implies perfect agreement while values less than 1 imply less than perfect agreement. Interpretation of values used in this case is as follows: < 0 poor agreement, 0.0-0.20 slight agreement, 0.21-0.40 fair agreement, 0.41-0.60

moderate agreement, 0.61-0.80 substantial agreement, and 0.81-1.00 almost perfect agreement.

The level of the agreement among raters in evaluation of language resources and tools belongs to fair agreement level, ranging between 0.328-0.397.

Free online translation tools presented in Fig.5 are evaluated by average Fleiss' kappa value of 0.336, with the highest level of agreement for Systran and Google Translate and the lowest for Neuro Tran.

Evaluation of Croatian language resources and tools is performed also by fair level of agreement of 0.328 in specific evaluation procedure for e-dictionaries, terminology bases, translation memories and Google Translate. Evaluation of Croatian resources and tools in general has obtained higher level of agreement - 0.397.
Google Translate, as preferred free online translation service, was evaluated by overall agreement of 0.365.

5.3. Discussion

This pilot research has shown, although as preliminary results, high interest in the use of language technologies, but also critical opinion in evaluation of language resources for the Croatian and for various languages.

According to Fleiss' kappa metric, there is a fair level of agreement among annotators in evaluation of free online language resources and tools. The average grade for various resources and tools on Internet is higher (3.36) than for the Croatian language resources and tools (3.10).

Although Google Translate is preferred tool for the Croatian language (other ones are of significantly lower quality) /**11**/, students appreciate Systran tool, developed for other languages.

Besides e-dictionaries, glossaries and terminology bases, students would also like to use translation memories and professional MT software, indicating the interest in the use of translation technology. 68.2% of students, if given a chance, would like to continue the education for the translation profession.

6. Conclusion

Europe is faced with the reality of plurilingualism with all its advantages and problems. The translator's profession has gained considerable changes in the European context. Translation profession requires today not only language knowledge and skills, but also technical knowledge and skills, intercultural competences, managerial skills, asking for an open-minded, intellectually curious and flexible person, willing to react in challenging situations.

Education for the translator's profession in accession country, such as Croatia, should follow the European trends and adapt the programs according to market demands, but continuing rigorous researches on the proper language.

According to the results presented by the pilot research, the students have shown high interest in use of translation technology for the Croatian and other languages, but also critical opinion regarding is suitability. If given a right opportunity, almost 70% would like to continue education for the translator's profession.

New technology requires investment, not only financial, but also educational, which involves curriculum changes, software and hardware equipment, but especially trained and well-educated teachers and researchers, who will take the burden of future education.

The following research would include larger quantitative research conducted among several generations, as well as qualitative analysis on use of the translation technology.

Acknowledgment

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