

The Use of Digital Technologies to Prepare Future Translators for the Modern Requirements of the Linguistic Services Market

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Abstract: *The importance of the topic is emphasized by the current educational environment, which demands that professionals possess adeptness in modern information technologies. This adaptability is crucial in an increasingly technologically advanced society. The main goal of study is to study the peculiarities of training future translators, as well as to prove the effectiveness of the use of digital technologies in the process of training future professionals. The analyses methods used were structural-functional, dialectical, synthesis, logical and comparative analysis, and generalization. As a result, it was established that a number of socio-economic changes caused the emergence of new standards of professional training of translators. Digital resources are a priority for the development of translators' skills and abilities. The advantage of using digital technology reduces the processing time without losing the quality of the translation, and this allows the translator to be efficient and popular among clients. For maximum effectiveness, the translator must have not only a solid foundation in linguistics, but also a deep understanding of culture, history, and religion.*

Keywords: localization, digitization of education, translation, globalization, internationalization

1. Introduction

Radical changes in the socio-economic sphere of Ukraine led to the emergence of new standards of professional training of future translators, which aim to prepare students for work in their specialty. The importance of studying this issue is evidenced by the fact that Ukrainian linguistic universities need to improve the professional training programs of future professionals. Despite the rapid growth of the translation industry, researchers have not paid much attention to the issue of modernizing the practical training of novice translators in the direction of forming their readiness for future professional activities. Therefore, the issue of professional training of future translators using digital technologies in modern pedagogical science is not thoroughly researched, despite the significant number of scientific developments that will contribute to

the solution of the described problem. Thanks to the modern processes of globalization, the development of computer technologies, and the need for rapid assimilation of new knowledge, there is a need to transform the educational process of training future translators. The creation of a new outlook on the process of training specialists, in which the computer, the Internet, and multimedia tools are present, forces one to improve and revise educational translation programs (Kerimkhulle et al., 2023; Nafiev and Lande, 2023).

The computerization of information technology helps speed up the translation process. As noted by Muratova (2019), the desire to get quick access to information prompts the search for new strategies for obtaining material and using acquired skills at the workplace. At the same time, there are challenges associated with the need to update current educational programs and train specialists capable of working under new programs. Students who wish to become translators now face new problems, as linguistic training, knowledge of translation theory, and practice are insufficient due to the significant development of information and computer technologies and the formation of new labor market requirements. According to the conclusions of Pylypchuk (2021), a modern translator must have skills in using a variety of computer programs, focusing on text editors, spell-check software, e-mail, and the Internet. It can be concluded that specialists should learn how to use computer assisted/aided translation (CAT) tools, which greatly simplify the translation process and make it possible to quickly and accurately translate information. These skills are necessary in order to become truly effective and to be in demand among clients and employers (Holovatska, 2022a; 2022b). As noted by Rostomova et al. (2021), a completely new field of translation was localization, which emerged in the 1990s. Now it is becoming more common as a result of the development of information technology, the creation of numerous programs, websites, and video games, and the need for their translation. According to the results of studies by Ivashkevych and Onufriieva (2020), a unique direction of localization was the translation of computer games. Various elements are subject to localization such as the name of the game, proper names, invented terms and idioms, metaphors, or linguistic units. In certain situations, this requires special knowledge and a creative approach.

Therefore, taking into account the above, the main goal of this study is to study and analyze the process of training future translators in the era of digitalization. The main tasks are:

- the analysis of machine translation tools in relation to the development of competence of future translators.
- to investigate such processes as localization, globalization, and internationalization.
- to determine the main requirements that the modern market of linguistic services puts forward for young specialists.
- to analyse the specifics of the training of future translators in higher educational institutions.

The scientific novelty of this research lies in the fact that for the first time, the impact of digital technologies on the formation of professionalism of future translators was investigated in detail, as well as the impact of translation automation systems on the quality of written translations of future specialists on the basis of the Ternopil Volodymyr Hnatiuk National

Pedagogical University. In further research, scientists need to pay more attention to the development of a set of methods during the study of professional disciplines to increase the effectiveness of the process of forming the readiness of future translators for professional activity.

2. Materials and Methods

In order to investigate this issue in more detail, theoretical research methods were used, namely analysis, generalization, and synthesis, as well as dialectical, structural, and functional methods. The fundamental is the structural-functional research method. With its help, the basis of the work was highlighted, namely: (a) the concepts of “digitalization of education,” “digital translation,” “localisation” were studied; (b) the essence and purpose of CAT tools as a whole were studied; and (c) the main requirements of the market of translation services were analysed. Using the dialectical method, the research and views of other scientists on this problem were analyzed, and a unified idea was formed about the development of the basic skills and abilities of future translators with the help of digital technologies. An important place during research is occupied by logical methods, namely methods of analysis and synthesis. In order to investigate in more detail, the question of the readiness of future translators to fulfil their professional duties, the object of this study was divided into several parts. Thus, it was analyzed separately what the essence of the translator’s profession is, how future specialists are trained in the era of digitalization, the set of skills and abilities that a qualified specialist should possess was studied. In the second part, the process of localization was studied in detail looking into why the ability to work with CAT tools was important in one’s job as well as the main pronunciations of the modern market of linguistic services for future specialists. With the help of the second method,–synthesis, all the received information was formed into a logically structured work. The following important methods should be highlighted: generalization and comparative analysis.

The study employed generalization methods to extract key insights and conclusions from research data and reviewed the literature. This approach facilitated the extraction of overarching patterns and principles from specific instances. Additionally, a comparative analysis was conducted to examine the effectiveness of translation automation systems. The outcomes from the experimental and control groups were contrasted to gauge the impact on translation quality. The study examined the differences in skills required for localization compared to traditional translation. It highlighted the changing demands in the translation field due to technological advancements. The analysis assessed the direct effects of automation on translation quality and the broader implications of technological integration in the translation industry. Generalization and comparative analysis were crucial for interpreting the experimental findings, relating them to broader research, and drawing conclusions about preparing future translators in the digital era.

On the basis of Ternopil Volodymyr Hnatiuk National Pedagogical University, a study was conducted to study the impact of translation automation systems (in the aspect of using terminological bases) on the quality of written translations of beginner translators. Twelve students (6 boys and 6 girls) of the first year of the master’s degree took part in the experiment. They were divided into 2 groups: experimental (EG) and control (CG). The material of the study was an excerpt of an article in English on social and political topics from the British online magazine *The Independent*. The length of the text excerpt is 14 sentences, 373 words. In general,

the text of the article was shortened so that students had time to complete the translation in class. Translation time is 80 minutes. During the translation, the students used the Memsources cloud-based translation automation system, as well as a terminological database that was specially created for the experiment and contained errors in the translation of 26 lexical units. All students completely translated the proposed text into Ukrainian. Students of the experimental group use the terminological base with errors in the process of translation. The students of the control group did not use the translation automation system and terminological base, but relied only on their own knowledge and skills. During the translation check, three areas were examined: (1) errors that significantly distorted the content of the original text or the student chose the wrong translation option offered in the terminological database; (2) errors that partially distorted the content of the original text or the student partially chose the translation offered in the database; and (3) errors that have little or no effect on the content. One penalty point was given for errors of the first type, 0.5 points for the second type, and 0.1 for the third type.

3. Results

Today, the education of a potential translator includes the development of not only academic knowledge but also a wide range of professional skills, which is extremely important in the market of translation services. In turn, the translation market makes significant demands on budding experts, pointing to the need for higher education institutions to improve and abandon traditional ways of training translators. In the process of globalization, translation began to transform, as a result of which the process of localization was formed (Heinisch & Iacono, 2019). This process is broader, more detailed, and takes into account the translator's knowledge of the language as well as their understanding of the culture and social dynamics of the target audience. The translator's experience in the classical sense of translation is also important, but in the process of localization, experience is of crucial importance as it determines how well the product will sell (Korinska, 2022; Latka et al., 2019). In recent years, the number of materials that require translation has been constantly increasing. This is explained by the fact that manufacturers want to increase the sales markets for their products. As a result, localization, which until recently became a new service in the language market, is gaining popularity. According to the definitions of the Globalisation and Localization Association (GALA), localization is the process of adapting a product or service to a certain territory. One aspect of the localization process is translation. Other elements include changing website layouts to accommodate translated information, changing currency, changing the way dates, addresses, and phone numbers are displayed, and taking local laws into account.

Localization, as an academic discipline, has a very recent history. The first step in the development of this direction was the introduction of special training courses at the initiative of the Localization Industry Standards Association (LISA). In 2007, a localization program was established at Ireland's University of Limerick. However, according to European experts, localization is still "almost invisible" for European universities as a field of study and as a specialty (Hubscher-Davidson & Devaux, 2021). The necessity of fundamentalizing the professional training of novice translators for localization in the educational environment of higher educational institutions is emphasized by the development trend of modern translation practice. Therefore, localization is described as the linguistic and cultural adaptation of a

digital product to the requirements and characteristics of a certain area, as well as services and technologies designed to ensure the multilinguality of the global information flow (Ronzhes, 2023; Scarpa, 2020).

The work of a translator requires searching for various sources of information that are important for this field. Digital sources are a priority today because they provide a solid foundation for the future growth of translators' skills and abilities (Jiang, 2020; Kulyk, 2023). Professionally important qualities of a translator are analytical, communicative, and creative abilities, as well as the development of such personal characteristics as observation, attentiveness, and efficiency. These qualities are developed in the process of translating activities using digital means. An analysis of the resources of information and communication technologies shows that a new approach to education has been formed. This became possible thanks to the effective integration of network technologies and digital educational materials (Prihunov & Yavorska, 2023). Interactions between students and teachers, as well as traditional teaching methods, have been transformed as a result of digital translation educational tools that meet students' demands for autonomous translation learning. The main and important part of modern education is digital translation, which is a fundamental component of the education of a future translator.

Most of the studies are devoted to the issue related to determining the potential of digital education in the training of future translators. A single algorithm for organizing the training of future specialists in the field of translation in the context of digital education has not yet been developed, and there is no consensus among scientists regarding the idea of "digital education" as a whole (O'Brien & Rossetti, 2020). In modern educational activity, there is a need to develop skills and abilities to quickly search for information, as well as to increase its source base. First, recognition of the priority importance of active, interactive, creative methods and forms of learning is noticed. The introduction of digital education reinforces the identified trend. The term "digital education" means the introduction of digital services and technologies into the pedagogical process (Sánchez Ramos et al., 2022). According to the research, this implementation transforms not only the educational environment, but also changes the responsibilities of the participants in the educational process and the guiding principles of their interaction. The use of digital education in the training of professionals (including translators) has significant advantages, namely:

- availability of educational resources, ensuring the continuity of the educational process.
- formation of individualized educational trajectories based on advanced learning technologies.
- expanding one's horizons.
- providing additional opportunities for the formation and improvement of professional knowledge and skills (Han, 2020).

Saving time and resources is possible thanks to digital technologies. For example, using the Internet and online dictionaries to translate documents can greatly speed up the process. Analyzing the idea of "digital translation" is worth noting that this problem is particularly

relevant when discussing the issue of training future translators in the context of the digitalization of education. “Digital translation” is a new field of technology aimed at increasing the efficiency of translation work and the quality of translated material. It is based on a system of network interaction between the translator and digital information and communication tools, artificial intelligence (Ge, 2021; Jatkiewicz, 2023). In order to be truly effective and popular among clients and employers, a translator must learn to use CAT tools. Today, CAT tools are widely used all over the world. These tools are designed to facilitate the translation of texts. They have nothing to do with machine translation systems. Therefore, during this automated procedure, an interpreter must be present who fully fulfils duties (Maylath & Amant, 2019). The computer only tracks fragments of the translated text for use in subsequent projects. This translation technology is called Translation Memory (TM). It is worth noting that the use of such software (e.g., Trados, Transit, Across, Wordfast) becomes a necessity for participation in significant translation projects. In addition, even when working with small documents and texts, more and more agencies, translation bureaus, and sometimes even direct consumers began to require translators to be able to use such programs (Bonyadi, 2020). This is because companies that have a strong connection to the translation sector work hard to create and constantly update their own TM database for future use. According to research by scientists, graduates of translation departments who have the skills to use SAT programs are popular and have a chance to get a job in a high- tech environment (Esqueda, 2020).

The fundamental principle of qualitative diagnosis is that the educational and cognitive activity of students is an indicator of their suitability for the future career of a translator (Bi, 2020). This activity is the result of the successful completion of various educational and cognitive tasks. It is important to remember that quantitative indicators are used to demonstrate the quality of student learning and, to some extent, represent a qualitative component of how future professionals develop their preparation for translation tasks. In the course of the work, an experimental study was conducted to study the influence of translation automation systems on the quality of written translations of future specialists. As the original text, the students were offered an excerpt from an article devoted to the problem of human rights protection during the administration of the President of the United States of America, Donald Trump. The choice of the topic of the article was determined by the fact that during their studies at the university, students get acquainted with the peculiarities of translating social and political texts within the framework of translation practice classes. In the classes, political and economic news were translated, which contributed to the expansion of knowledge about the political systems of different countries and the background knowledge necessary for translation.

According to the results in the experimental group, the rate of errors of the first type varied from 3 to 13 penalty points. This indicator in EG was explained by the fact that students mostly focused on the terminological base rather than on their own knowledge. Student 3 had the highest number of errors of the first type (13 points, respectively), student 6 made the smallest number of errors of the first type. The average value of errors of the first type, which included errors that significantly changed the content of the original text or the choice of the translation proposed by the terminological base of a certain word or phrase, was equal to 7.3. Student 3 made the most errors of the second type (penalty point is 1.5). This was explained by the fact that some lexical units were unknown to him, unlike other subjects. The average penalty point for errors of the second type was 0.5. This result was connected with the fact that the lexical units, the content of

which was slightly distorted, were generally familiar to the students. The average penalty point for errors of the third type, which included those that did not affect the content of the message, in EG was 0.15 (see Table 1).

Table 1

Results of the Experimental Cut of The EG Group Using the Terminological Base with Errors (in Penalty Points)

Student	Type 1 errors	Type 2 errors	Type 3 errors	Total number of penalty points
Student 1	8	1	0.1	9.1
Student 2	9	0.5	0.2	9.7
Student 3	13	1.5	0	14.5
Student 4	6	0	0.2	6.2
Student 5	5	1	0.2	6.2
Student 6	3	0.5	0.2	6.2
Average value	7.3	0.5	0.15	8.65

The total indicators in the control group varied from 3.6 to 13.1 penalty points. The students have the best result in CG (the total penalty score is 3.6). Student 14 has the worst result (13.1 penalty points). In EG, students also made errors of the first type, but were significantly fewer than errors of the second and third types. The average number of errors of the first type was 4.6, which was significantly less than the indicator in EG. It was interesting that the rate of errors of the second type in CG was almost twice as high as the results in EG (see Table 2).

Table 2

Results of the Experimental Cut of The CG Group Without Using the Terminological Base with Errors (in Penalty Points)

Student	Type 1 errors	Type 2 errors	Type 3 errors	The total number of penalty points
Student 1	4	0.5	0.3	4.8
Student 2	7	0.5	0.1	7.6
Student 3	2	2	0.1	4.1
Student 4	4	1.5	0.2	6.2
Student 5	2	2	0.1	3.6
Student 6	3	1	0	5
Average value	3.6	1.25	0.1	5.2

It can be concluded that the professional development of an individual is a complex process that unfolds dynamically over time. The process is marked first by the development of professional skills, then by the assimilation of new knowledge and skills that will help to fully realize oneself in the translation activity. Ukraine, which is gradually integrating into the pan-European educational space, needs to take into account the world experience of training

translators. To do this, the system and content of the training of future translators should be reviewed, the experience of developing educational programs for higher education institutions in other European countries should be taken into account, and the latest methods of translation competence formation should be introduced. All this will help the labor market of Ukraine and other European Union countries adapt future translation specialists to modern requirements.

4. Discussion

Digital technologies are now widespread and increasingly used in all spheres of human activity, in particular in education, namely in the teaching of foreign languages in higher educational institutions, which increases the level and quality of training of future translators. When studying lexical and grammatical material, working out pronunciation, learning dialogic and monologic speech, writing, during control of acquired skills, and speech preparation, digital technologies significantly help in the development of these skills (Lomachinskyi, 2023).

As noted by Bonyadi (2020), the main task of the traditional professional training of future translators was the formation of skills necessary for the following types of professional activities: (a) the use of translation technologies taking into account the peculiarities of the source text and context to achieve the maximum communicative effect; (b) understanding of the source text and the ability to create material in the original language; and (c) mobilization of the system of knowledge and skills to reproduce the behavior of representatives of different cultures and language groups. However, it is worth agreeing with the conclusions of Esqueda (2020), who noted that future translators must learn to adapt to a dynamic and changing market environment to cope with the exponential growth of work patterns. As a result, in the context of professional development, future translators should also receive more than just a hard set of skills, but also a set of soft skills that allow them to work flexibly and respond to events in different professional contexts. Soft skills include interpersonal, media, and communication skills, teamwork, leadership, critical thinking, and cultural sensitivity (Degtiarova et al., 2023).

According to studies by Jiang (2020), the qualification requirements that are necessary to become a translator do not meet the current challenges. In order to maximize the process of learning foreign languages in higher education institutions, several innovative learning methodologies have been adopted. Therefore, a potential translator must have a solid foundation in linguistics as well as a deep understanding of the culture, history, religion, and psychological traits of native speakers. The process of training a competitive specialist needs reorganization in connection with the modernization of higher education in order to achieve an integrated final result, which is the acquisition of professional competence. As noted by Bi (2020), in the context of the digitalization of education, the issue of developing the digital competence of future translators is relevant. The ability to confidently, effectively, critically, and safely choose and apply information and communication technologies in various areas of life is known as digital competence. It is based on the continuous development of relevant knowledge and skills. The researcher emphasizes the complexity of this phenomenon and the development of responsibility, motivation, and value spheres in a person as elements of professional growth in a digital society. They mean identifying a person's needs and desires, the degree of their readiness for development, determining their attitude towards the Internet, as well as the degree of

understanding and acceptance of norms, rules, and values.

It is worth agreeing with the opinion of Kanglang and Afzaal (2021). They claimed that for maximum effectiveness, this type of competence should be developed from the very beginning of the training of future translators. This allows the student to better understand the experience of other scientists working with digital technologies, learn how to use them when performing tasks, and see what opportunities the digital environment offers for their own professional development. Important that such training is carried out gradually. Only in this case will the future specialist be able to learn to effectively use the information received and realize the need to update knowledge not only in the field of digital technologies but also in ordinary education, as well as the need to train a translator throughout his career.

According to the results of the theoretical studies of Hubscher-Davidson and Devaux (2021), translators in the age of digitalization needed to develop their skills not only in the context of translation but also in programming. This necessity is explained by the fact that, in general, localization involves the translation of online services, websites, and computer games for a certain target audience. Computer games, for example, are often created in English, have an English-language interface, and are designed with the reality of people living in the US or Canada in mind. Sometimes localization involves translating software, games, and system support, as well as adapting (adjusting) the color scheme of a game or website to suit the target audience (Sharipbay et al., 2016). After all, a potential professional must first find and access translated information to translate computer games, mobile applications, or websites. Programming skills enable translators to access and translate digital content, while language proficiency and translation experience remain crucial for producing accurate and culturally adapted translations. A balanced skillset encompassing both translation mastery and digital fluency is key for professional success.

Having studied the topic of translation localization, Han (2020) analyzed such processes as globalization and internationalization, which are often discussed by other scholars. These two ideas contribute to the localization process. Previously, globalization and internationalization were used only to promote goods to the world market, and the names themselves came from marketing. In a broad sense, globalization is a process resulting in the unification of social, political, economic, and cultural standards and the creation of a single integrated system. Trade, communication, and close cultural ties can contribute to globalization (Urban et al., 2023). International trade and the world market are, at the same time, the main factors. Internationalization is the process of adapting a product so that it can be used in other languages. Internationalization consists of the “neutralization” of the characteristics of a certain product, which are characteristic of the society in which it was formed. As a result of the process of “neutralization,” a new text is created, known as “interlingua, which later turns into a localized text. As it is much easier and cheaper to find English-speaking localizers, as well as the fact that their work is of higher quality, this reduces the time it takes to find the necessary personnel. Thus, worth considering that a localizer is a person who, in addition to translation, has knowledge of several disciplines, as knowledge of translation is not enough to achieve success in this field.

According to the researcher’s conclusions, the ability to work with CAT tools in their work is important when training future specialists. Machine translation should not be confused with CAT tools, which are applications designed to facilitate translation. Traditional translation,

or using text editors, takes a lot of time. CAT tools allow segmenting text and easily tracking progress. They also allow determining how much work remains to be done, compiling glossaries, using the translation database, performing consistency searches, and monitoring the progress of colleagues if the translation is part of the project. Prospective translators have the opportunity to choose the CAT tools with which they are most comfortable working or which are offered by the organization, as each such tool has its own unique features. Glossaries and translation databases are important resources. They maintain translation integrity by listing all terminology and keywords/phrases in the glossary, keeping duplicate sentences at the bottom of the translation, and automatically replacing them. These parameters reduce the time of work and improve the quality of translation.

Therefore, the professional development of future translators, including the development of their communicative competence, will meet modern standards only when the formation of a highly spiritual linguistic personality becomes the main direction of their socio-humanitarian, methodological, and psychological-pedagogical training. Important to note that the profession of a translator has its own unique features, including the ability to switch between languages, memory for speech works of various volumes, the ability to use a phraseological series to express a certain opinion, the ability to quickly form and put forward one's own statements, as well as tolerance for interlocutors of different social status and level of foreign language proficiency.

5. Conclusions

Digital technologies are becoming more widespread in various fields, including translation education. As translation practices have been affected by globalization, localization has emerged as a broader process that involves linguistic and cultural adaptation. Translators need technical expertise in addition to linguistic knowledge to carry out localization. The experimental study showed that students who relied on a terminology database with errors made more significant mistakes than those who relied solely on their skills and knowledge. This underscores the importance of proper training when using CAT tools. CAT tools like Trados and Memsource provide a valuable aid for translators working with texts in diverse formats, including websites, documents, and other online platforms. Unlike machine translation, which automatically generates output, CAT tools allow human translators to leverage translation memories, maintain terminology consistency, and work efficiently. Developing expertise in utilizing these tools is key to translator effectiveness and employability. Along with translation skills, future translators need "soft skills" like cultural sensitivity and critical thinking to adapt to evolving market demands.

To adequately equip students, training programs must keep pace with advancing technologies. This can be achieved by incorporating hands-on practice with CAT tools using diverse content types, in addition to language-focused translation exercises. This will better prepare trainees for real-world localization projects. As digital media and multilingual platforms continue to proliferate, there will be a high demand for translators skilled in specialized tools and knowledgeable about internationalization processes. Further research is necessary to develop effective training methods that integrate technology into translator education with a focus on localization.

CAT tools and machine translation represent different approaches to translation automation.

CAT tools aim to assist human translators, while machine translation tries to fully automate the process without human involvement. CAT tools increase productivity for human translators by leveraging translation memories, maintaining terminology consistency, and enabling collaboration. However, human review is still required to ensure quality. In contrast, machine translation tools like Google Translate directly apply algorithms to translate text, often lacking nuance and context. Extensive human editing is needed to correct MT errors and improve readability. Although MT seeks to replicate human translation, its generalized nature results in inaccuracies and a lack of style. In summary, CAT tools focus on augmenting human translators through technology, whereas machine translation attempts to replace human effort with algorithms but cannot match human expertise and nuance. The human element remains essential, even when leveraging translation technology.

The study provides initial experimental evidence that over-reliance on databases can impede translation quality. This reinforces the importance of balanced training focused on leveraging technology judiciously along with translation competence. With prudent integration of CAT-tools practice into higher education programs, future translators will gain the requisite technical abilities to thrive in the digital era.

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