Features of the use of cloud-based translation systems in the process of forming information competence of translators

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Abstract. The current trends in the translator training are shown, which reflect the orientation towards the use of cloud-based automated translation systems. The possibilities of studying cloud-based translation systems in the educational process of training the translator are considered. The role of mastering modern translation tools for forming information competence of translators, particularly technological component, was described. The definition of the list and type of basic translation tools that should be mastered in the studying process was discussed. These tools should include automated translation systems and terminological management systems. It is advisable to provide for the study of both desktop and cloud-based systems. The inclusion in the content of the training translators the study of cloud-based systems of automated translation after desktop systems is proposed. A number of advantages of cloud-based translation systems for the use in the process of training the translators is defined and substantiated. A comparative analysis of the functional of cloud-based automated translation systems (Wordfast Anywhere, XTM Cloud, and MemSource) with the aim of including them in the content of the training program for translators has been carried out.

Keywords: information competence, computer-assisted translation (CAT), cloud-based translation system, translation memory database, terminology database, studying, translator.

1 Introduction

The system of professional training the modern translator should be aimed at the formation of a number of professionally significant competencies. The list of these competencies in terms of name and content may vary significantly depending on various factors, in particular, the characteristics of the educational system of a particular country, the content of educational programs for the training translators for different institutions of higher education, etc. This program involves the formation of five core

competencies [6]. The essence of one of these competencies, technological (tools and applications), is, among other things, the acquisition of knowledge of the effective use of automated translation systems (CAT systems) in solving professional problems [2]. A similar aspect of the requirements for the results of professional training of a translator on the ability to apply innovative technologies in translation based on the use of information technologies is also reflected in the International standard for providing translation services ISO 17100:2015 "Translation Services. Requirements for translation services". In this standard, this is indicated by the technical competence of the translator, which means having the knowledge, skills and abilities necessary to perform technical tasks in the translation process by applying tools and IT systems that support the entire translation process [11].

2   The purpose of the article

The purpose of the article is to consider the possibilities of studying cloud-based translation systems in the educational process of training the translator and to determine their advantages and limitations (on the example of Wordfast Anywhere, XTM Cloud, and MemSource).

3   Literature review

Today, cloud technologies are developing very rapidly [13; 18]. Translators can choose from a wide variety of professional cloud-based translation memory products. The cloud-based translation memory systems are more convenient and easier to use than traditional desktop systems. The characteristics of cloud-based translation memory systems are game-changers for freelance translators, as well as for small and medium-sized language service provider businesses [15]. Translators will still be needed, but their working conditions into the next decade will be completely different [6].

Ignacio Garcia explores the influence of cloud computing on translation, including professional translation. He believes that the cloud computing reshapes the management of labor in ways that unsettle the traditional relations between managers and workers. It gives managers live control over how a project progresses, and a minute description of how each worker performs [8; 7]. According to some researchers [5], cloud technologies allowed to unite translation memory with machine translating, get access to external databases and introduce more flexible translation management systems. In turn, this allows you to improve the quality of translation.

Alexandra Kleijn considers, in particular, Wordfast Anywhere and XTM Cloud to be the most common examples of the new type of CAT systems. She clarifies that some of cloud-based CAT systems are primarily aimed at translation agencies and provide a translation environment as well as a number of project management functions. Others, such as Wordfast Anywhere, XTM Cloud and WordBee, are also great for single translators. For example, Wordfast Anywhere is provided by the manufacturer Wordfast as a free SaaS application on the Internet. Here only a registration is required [12].

Rei Morikawa marks among the best CAT systems, in particular, Memsource and XTM cloud-based CAT systems. The advantages of Memsource include the leading cloud-based translation management system, accepting 50+ file types and powerful workflow automation. The author considers XTM features to provide new projects from common file types [14]. However, as Klaus Hauptfleisch notes, the skills of working with SDL Trados remain important for the translator. It is the leading CAT system for German Computer-Aided Translation with integrated Translation Memory System (TMS), terminology database and much more. In his opinion, in fact, SDL Trados Studio also convinces with its ease of use and rich features that other CAT tools have limited [10].

Recently, both scientists and practitioners have compared various CAT systems, trying to determine the most effective of them. So, Emma Goldsmith compares SDL Trados Studio and memoQ and concludes that "both systems share almost all the features that can be considered essential in a CAT tool" [9]. Laura Moreno Sorolla carried out a comparative study of advantages and disadvantages of OmegaT and Memsource. At the same time, a predominance of Memsource providing more functions was noted: "OmegaT works solely as a CAT tool. On the other hand, Memsource includes features that permit the management of a translation project" [19]. Nikita A. Panasenkov, Larisa I. Korneeva compare the performance capabilities of working in the computer-assisted translation systems SDL Trados and SmartCat. In their opinion, SmartCAT can be recommended, most notably, to novice translators who wish to quickly master and start using the CAT-tool, as well as to learn how to offer their services in the translation market. SDL Trados is oftentimes chosen by experienced translators who are engaged in the translation industry on a permanent basis, work with a variety of document formats and wish to improve their competitiveness in the translation market [17].

The changing conditions of translators work depending on the rapid development of information technologies requires the appropriate orientation of the educational process content. Ukrainian universities that train translators are beginning to pay more attention to the need to study automated translation systems, including cloud-based translation systems [4; 16].

4   Results and discussion

It is worth noting that one of the core competencies of the translator, which is close in essence to the above, reflects the current trends in translator training, and therefore not only accumulates mentioned properties, but also complements them with other components in the aspect of mastering modern translation tools, is defined by us as information competence [3]. In our opinion, the information competence of a translator should contain the following components: information retrieval competence, information and technological competence, information and technical competence, information and analytical competence, information and editorial competence, information and thematic competence, information and legal competence. These components differentiate the approach to mastering, first of all, specialized software in

various aspects of the preparation and implementation of translation projects.

Confirmation of the multidimensional nature and importance of the process of mastering modern translator tools is the awareness of the increasing number of higher educational institutions in Ukraine, which train future translators, the need to study information technologies, in particular, automated translation systems and terminological management. Thus, some of them, in addition to traditional courses in computer science, began teaching special or optional courses aimed at studying the peculiarities of using CAT systems in translation. In other universities, elements of information technologies are included in the content of professional courses. However, educational programs for the training translators in various educational institutions where such steps have been taken have significant differences in terms of:

— availability of special courses, modules or sections of academic disciplines;
— list of modern tools of translator based on information technologies and selected to study;
— the time allotted for the study of modern tools and technologies;
— a place in the schedule of the educational process, determined for the study of special courses, specialized modules or sections;
— ensuring the continuity of the study of modern tools and technologies during the training period;
— availability of specialized technology translation practices on the skills and abilities of using specialized translation tools.

In view of the wide range of differences in the content and organizational structure of educational programs for the training translators in terms of technological competence formation, in our opinion, the key aspect is the definition of unified approaches to the list and the type of basic tools to be mastered in the studying process. First of all, we mean automated translation systems. This issue is ambiguous from the standpoint of the availability of one or another software, the typicality of performing basic operations, its prevalence in the translation services market, the possibility of its use in further professional activities, etc.

An important aspect is the consideration of current trends in the development of the global translation industry and the strategies of leading companies that are leaders in the development and provision of modern translation tools. Over the past 10 years, the essence of the work of a translator, especially in the field of technical translation, has changed dramatically. This is primarily due to the widespread implementation of information technologies, in particular, automated translation systems and terminology management system.

Today, leaders have been identified in the development of such specialized software, whose products are used by the vast majority of both translation agencies and freelancers. These include software products such as SDL Trados, MemoQ, STAR Transit, Wordfast, Across, Atril Déjà Vu and others. Studying one or several such programs in the process of training translators is a guarantee of the formation of information competence components that will ensure their competitiveness in the market of translation services.

However, the structure of translation services continues to change and improve. Despite the dominant position of powerful desktop CAT systems, over the past 5 years cloud technologies have been actively developing to provide key tools to the translator. The concept of companies that offer such technologies is not to earn profits through the sale of software licenses, but through the involvement of as many translators as possible in their services. At the same time, they receive a free, or at a minimum price, access to services and tools, and profit is generated by deducting the percentage of orders executed and the use of additional services. Such a policy is attractive to novice translators and freelancers who make up a significant percentage of the professionals involved in the translation industry, due to the possibility of constructing a full cycle of the production process for the performance of translation projects. Somewhat slower, such technologies penetrate into the work of powerful translation structures, although the developers of these technologies also make efforts to meet their needs. Such changes significantly affect the paradigm of the translation industry, its development trends, and the content of the translator's skills, which requires improvement of the process of their training and largely involves the formation of readiness for the use of such services. These technologies are currently implemented in such cloud-based CAT systems as: XTM Cloud, Wordfast Anywhere, MemSource, MateCat, MemoQ, smartCAT, etc.

Considering the possibility of studying the cloud-based systems of automated translation in the process of training the translators, it is worth noting that they have a number of limitations that need to be taken into account when making such a decision. One of the major limitations is the size of files that can be processed in one or another program. In particular, the file size that can be downloaded, for example, in XTM Cloud, should be no larger than 550 MB. This restriction applies to the following categories of files:

— project source files;
— imported translation memory files;
— imported files of terminology databases;
— imported files with client information;
— imported files with user information.

There are a number of similar restrictions in the Wordfast Anywhere system. In particular, Wordfast servers can store up to ten documents for translation at a time. At the same time, the maximum volume of one download must not exceed 20 MB. The range of file sizes to translate can extended a bit by downloading their archived version. With regard to the file with the translation memory database, it has a restriction in two categories: either its volume should be up to 200 MB or contain no more than 500 000 segments. In general, Wordfast allows to store up to 100 files with translation memory databases. For files with terminology databases, the limit is set to the number of entries in them, which cannot exceed 100,000. And such files, in general, can be downloaded to 100.

Such restrictions can be a barrier to professional translating in companies with a large volume of orders. However, as it comes to the choice of cloud-based automated translation systems for use in the studying process, these constraints make it possible

to apply these systems as a means of studying and to work out the main stages of the performance of translation tasks.

Considering the possibility and expediency of including the study of cloud-based systems of automated translation, it is necessary to determine the level of unification of knowledge and skills that can be formed when simultaneously or sequentially studying desktop and cloud-based systems. In this case, it is advisable to emphasize the logic of the priority study of the desktop variants of such systems and then demonstrate to students the transition to cloud solutions, since the combination of both systems in the production process is logical and confirmed by existing trends in the translation field. It is advisable to make such a comparison according to the main stages of performing translation projects using both types of systems. In particular, for comparison, we distinguish the following main stages:

— creating a project and setting its parameters;
— creation and connection of terminology databases;
— creation and connection of translation memory databases;
— translation and verification of its quality.

The results of the study indicate that for performing a significant number of operations within certain stages, both in desktop and in cloud-based systems, the same type of skills can be formed. However, for the most part, the same type of operations are more complex and technologically advanced when executed in desktop automated translation systems compared with cloud-based translation systems, which tend to be fully automated. On the one hand, it simplifies the use of cloud-based systems, but, on the other hand, their study does not provide the depth of knowledge that is required to perform certain stages of translation projects by means of desktop systems. This confirms the previously expressed opinion on the expediency of the priority study of desktop automated translation systems. At the same time, the differences between different cloud-based systems are considerably smaller, which gives grounds for asserting that it is possible to form skills for performing these stages of translation projects, for example one of them. This can be confirmed by using most of the MS Excel office files to create terminology databases, similar tools for automatically aligning parallel texts, and using them as a translation memory database in .tmx format, similar tools for checking the quality of translations, etc.

In this aspect, it should be noted that the direct translation work in the overwhelming majority of both desktop and cloud-based systems is positioned as work on the project and begins with its creation. Despite some differences, the essence of the main operations to create a project is common, in particular: the choice of the direction of translation, the choice of translation files included in the project, the connection of translation memory databases, the connection of terminology databases, etc.

A positive feature of this process in XTM Cloud is the automatic analysis of the output file for its structure, the amount of materials to be translated, the repetition of individual elements of the text, exact and inaccurate coincidence with the translation memory database, etc. A fairly detailed report on such an analysis is generated in the form of a .xls spreadsheet and sent to the user on the mailbox. Such information is important at the initial stage of interaction with the customer in agreeing on the main

parameters of the project: terms of execution, definition of cost, conditions for the creation and transfer of the translation memory database, etc.

A qualitatively new level of translation efficiency with the use of automated translation systems has been achieved thanks to their use in combination with translation memory databases, which allowed the use of previously performed and verified translations. This fact makes one of the priority tasks in the study of CAT systems to focus on the formation of knowledge and skills for the creation and use of the translation memory databases basically. One of the common approaches to such operations is to align parallel texts. About the importance of these operations can be judged from the fact that in most desktop versions of common automated translation systems there are separate modules that ensure their performance not only manual but also automated. An example of such modules can be SDL Trados WinAlign, LogiTerm Text Aligner, MultiTrans PRISM TextBase Builder, TextAlign, YouAlign, etc. When choosing cloud-based systems, special attention should also be paid to the availability and terms of use of such tools.

Aligning parallel texts in order to create translation memory databases using the Wordfast Anywhere toolkit is done automatically, requiring only downloading files with target and source text. As a result of alignment an archive is created that contains at once three files with aligned parallel text in the formats .tmx, .txt, .xls. Student can download such archive directly to their computer, or send it to their own mailbox.

The highest value among the available files of the specified archive is the aligned parallel text in the .tmx format, since it is actually a file with a translation memory database. It can be directly connected to many automated translation systems or, through simple transformations, transformed into its own format of the translation memory database of one of the CAT systems. A significant advantage in generating such a file is that it automatically runs filters that allow to not add repeat segments to the base, numerical segments, untranslated segments, and so on. In these circumstances, the need for specialized editors to rearrange aligned segments disappears. However, a certain disadvantage of creating parallel aligned text in automatic mode is the inability to influence the established relationships between the segments of the source and target texts.

A feature of the .xls file in the current archive is the placement in a tabular form of segmented text, where the compared segments in the source and target languages are placed within the same line. In addition to each segment in the following columns, the numerical values of the quality comparison of segments are given. Additionally, separate segments may be provided with additional information about the identity of the source and target segments, their repeatability, etc. This form of presentation of parallel text alignment results is convenient for analyzing the alignment performed, editing segments in the event of errors, removing segments that contain only the source or target text, and so on. However, the aligned results processed in this way and saved in .xls format do not allow them to be used as a complete translation memory database in combination with automated translation systems. In case of making a decision on the use of materials stored in this format as a translation memory database, it is necessary to carry out a number of software transformations in order to save them in the appropriate format.

The MemSource tool for aligning parallel texts and creating, based on them, the translation memory databases by the nature of the work is similar to that performed in Wordfast Anywhere. In particular, the user's algorithm thus reduces to the installation of source and target languages and downloads of files with target and source text. Subsequent operations for segmentation of text, matching segments, and loading of results in the form of .xlsx file on a user's computer are done automatically. Similarity of execution of such operations in different cloud-based systems of automated translation is a positive aspect from the point of view of ease of their mastering in the availability of the developed skills of such actions in one of the systems. The result of this operation is automatically segmented and aligned parallel text that can be downloaded to own computer as two spreadsheet options in various .xls files. The difference between them is that one of them contains a complete list of segments and variants of their comparisons, and the other – only those segments, the level of probability of coincidence exceeding 90%. However, in the version of the program, which can be given a free term of 30 days and has reliable advantages in this regard for use in the educational process, the function of parallel texts, as well as the creation of translation memory databases, is absent at all. All segments that are translated into work are automatically saved to the connected translation memory database. If necessary, you can download the database at your computer in .tmx, .txt, .xls, .txlf formats (Wordfast Anywhere).

An integral part of the process of studying automated translation systems, both desktop and cloud-based, is the ability to collect, process, structure and store terminological material in such a way that it can be used as terminology databases compatible with these systems. The conceptual principles of quality management of translations are based on this in terms of ensuring the unity of terminology within a translation project or a separate document.

Depending on the level of information technology acquisition in the process of professional training of a translator, it is expedient to use a differentiated approach to mastering the technology of working with the terminology material. In particular, at an early stage, future translators need to develop the skills of placing terminological records in the MS Excel table structure. Studying by students of this method of organizing the terminology will ensure the possibility of constant accumulation of the developed terminology due to the simplicity and comprehensiveness of the process of data entry [1]. From the point of view of the organization of the educational process, this creates additional advantages due to the availability of the specified program as part of the office package.

It is important to note that a large part of popular automated translation systems require terminology databases in specialized formats, the technology of their creation is quite complicated. So in particular, for the SDL Trados system terminology base should be presented in .sdltb format.

Considering in this context cloud-based automated translation systems, it should be noted that most of them are capable of working with terminology bases that can be stored in several formats, one of which is usually .xls format. So in particular, when working with the MemSource system in order to improve the efficiency of translation, terminology databases can be imported in the formats .xlsx and .tbx. Wordfast

Anywhere supports work with terminology databases stored in .xls, .tbx and .txt formats. The XTM Cloud system is able to accept a fairly wide range of terminology database files – .xlsx, .xls, .tbx, .mtf. However, it should be noted that despite the possibility of these systems operating with terminology databases in .xls format, the structure of the placement of terminological data in them is different. There are also differences in the use of character identifier of languages, which denote column headers, within which the terms and their correspondences in different languages are placed. This feature requires the inclusion of a separate topic in the structure of the training material, which allows to master different approaches to the use of character or numeric identifiers of languages that vary according to the chosen standard or other features.

The structure of the terminology data placement in Wordfast and XTM Cloud systems is the simplest and most logical since it involves the organization of terminological material in such a way that all information relating to one term is placed sequentially within adjacent columns at the same level. In addition, such a structure almost coincides with the structure of preliminary preparation of terminological material for the formation of the terminology database for the SDL Trados system. The difference lies in the fact that Wordfast does not use any identifiers and codes for column headings with terms. In XTM Cloud it is necessary to use the combined language codes and country codes (locale) in accordance with the standards ISO 639-1 and ISO 3166-1 alpha-2 (en_US for English, uk_UA for the Ukrainian language), and for SDL Trados must be used the Ukrainian and English identifiers respectively. Instead, the organizational structure of the MS Excel spreadsheet for ordering terms in the MemSource system involves the presence of not only columns with terms in different languages, for which the names are used by codes according to ISO 639-1 (uk – Ukrainian language code, en – code of English language), but separate fields for the placement of special IDs for each term. However, such a structure is the most complete, and at the initial stage of structuring terminological data in an MS Excel table, to load them into the terminological base, it is enough to place them in two adjacent table columns.

Despite these differences, the possibility of structuring terminology in the spreadsheet format MS Excel creates favorable conditions for the rapid mastery of one or another cloud-based system implemented in the content of specialized courses or modules.

After studying the main stages of translation projects using the desktop system SDL Trados CAT system in the course "Information technologies in translation projects", three laboratory works were added to the course content. These labs were aimed at performing translation projects using cloud-based CAT systems, in particular MemSource, Wordfast and XTM Cloud. The developers of these systems provide the opportunity to use them for free for a certain period, sufficient to complete the task. These systems were chosen for study in view of the fact that they are leaders among the cloud-based CAT systems [12; 14; 15]. After the completion of these tasks, students were surveyed to identify their attitude to the use of a particular cloud-based system, as well as a generalized assessment of desktop and cloud-based CAT systems, the need and consistency of their study, functional features, and so on. 52 students took part in

the survey.

The content of the first questionnaire included questions, in answers to which students had the opportunity to express their desire to study and their vision of the logic of studying CAT systems in general and in particular their types. There were five such questions.

The results of the questionnaire are given in Table 1.

Table 1. The results of student survey about the vision of the logic of studying CAT systems

Questions	Answer "Yes"		Answer "No"	
	Number	%	Number	%
1. Is it reasonable to study desktop CAT systems before studying cloud-based CAT systems?	34	65.4	18	34.6
2. Is studying cloud-based CAT systems promising for a future translator?	46	88.5	6	11.5
3. It is advisable to study the desktop and cloud-based CAT systems in the process of training translators at the same time?	29	55.8	23	44.2
4. It is advisable to study several cloud-based CAT systems in the process of training translators?	12	23.1	40	76.9
5. Do you think that the key criterion for choosing and studying the CAT system is its popularity among professional translators, and not the cost?	22	42.3	30	57.7

According to the results of the survey, after studying both types of CAT systems, the majority of students (65.4%) realize the need to master the work with both desktop and cloud-based CAT systems. In addition, the overwhelming majority of students (88.5%) understand the need to master cloud-based CAT systems at the current stage for successful further professional activity. However, 76.9% of them believe that in the learning process it is advisable to concentrate their efforts on studying only one of them.

The content of the second questionnaire included eight questions that reflect the main aspects of the experience of students using cloud-based CAT systems.

The results of the survey are shown in Table 2 and Figure 1.

Analyzing the students' answers on the second questionnaire, we can conclude that, in general, all three cloud-based CAT systems were positively evaluated by them as an important tool for preparing and carrying-out translation projects. At the same time, it is worth noting that students expressed the greatest number of positive reviews about the MemSource cloud-based CAT system, in particular, about the understandability of the interface (51.9%), the convenience of creating a translation project (53.8%), supporting the translation process (42.3%).

However, students also praised other CAT systems for individual indicators. So, the students liked Wordfast most of all by such indicators as the registration process for using the free version (78.8%) and the preparation of terminology bases (46.2%). When studying the XTM Cloud system, they made the most of the previously acquired experience in creating and carrying-out a translation project in the SDL Trados system, which was noted by 46.2% of students.

Table 2. The results of a student survey on the experience of using cloud-based CAT systems

Questions	MemSource		Wordfast		XTM Cloud	
	Number	%	Number	%	Number	%
1. In which of the cloud-based CAT systems is the easiest to register for using the free version?	8	15.4	41	78.8	3	5.8
2. Which of the cloud-based CAT systems is the easiest to learn?	21	40.4	14	26.9	17	32.7
3. In which of the cloud-based CAT systems interface is the most understandable?	27	51.9	10	19.2	15	28.8
4. In which of the cloud-based CAT systems to create a translation project was the most convenient?	28	53.8	15	28.8	9	17.3
5. In which of the cloud-based CAT systems the skills of placing terminological records in the structure of the MS Excel table most effectively ensured the creation of terminological databases?	15	28.8	24	46.2	13	25.0
6. Which cloud-based CAT system toolkit provided the most efficient creation of a translation memory base?	20	38.5	15	28.8	17	32.7
7. In which of the cloud-based CAT systems the support of document translation process is better provided?	22	42.3	12	23.1	18	34.6
8. In which of the cloud-based CAT systems are the main stages of creating and carrying-out a translation project as close as possible to the desktop system SDL Trados?	17	32.7	11	21.2	24	46.2
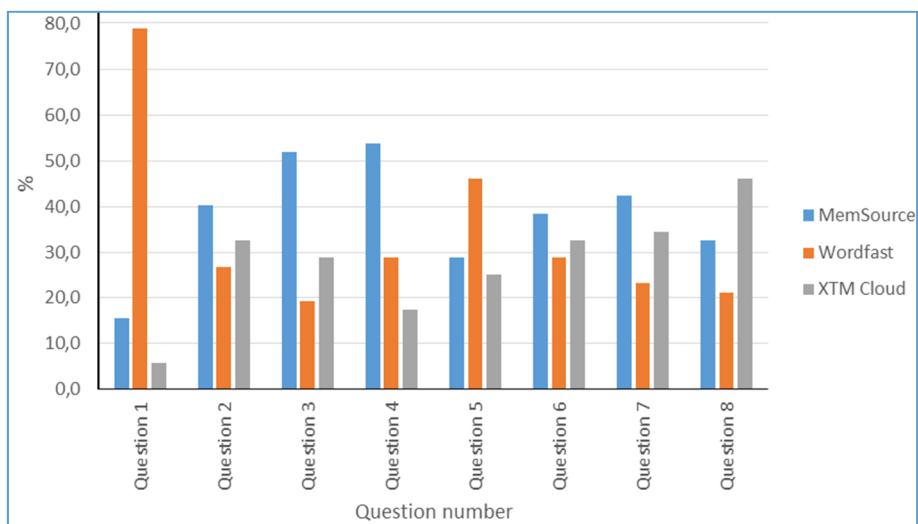
Fig. 1. Comparison of cloud-based CAT systems based on the results of a student survey

5   Conclusions

An important aspect of the process of formation of the information competence of a translator is to determine the list and type of basic tools of translation activities that should be mastered in the learning process. First of all, such tools should include automated translation systems and terminological management systems. The implementation of the study of cloud-based CAT systems into the content of future translators training is one of the pressing problems at the present stage of development of the translation industry, which is promoted by a number of factors.

1. Full functionality of the latest versions of the top cloud-based CAT systems and their widespread use in the translation industry:

− availability of basic tools for the carrying-out of all stages of the translation project (creating a project and setting its parameters; creating and connecting of terminology databases; creating and connecting of translation memory bases; translating and quality control);
− a high level of unification of technologies for creating terminological resources in various systems greatly simplifies their study.

2. Simplified version of their use in the educational process:

− availability of free versions on a permanent or temporary basis;
− no need to install systems on your own computer;
− ability to work with systems anywhere with an Internet connection.

3. Possible reliance on previous knowledge of students:

− preparation of terminological databases based on previously obtained knowledge and skills to use MS Excel office suite for structuring data in tabular form;
− having skills to use desktop systems, in particular: structuring terminological data using international standards for the use of symbolic or numeric identifiers of languages, specialized formats for terminological data, adding records during the process of translating, importing and exporting terminological databases to the system.

4. High motivation of students to study them:

− understanding the prospects of studying cloud-based CAT systems for future professional activities;
− awareness of the need to use specialized tools in professional activities with consideration of cloud systems as an alternative with insufficient financial opportunities.

Therefore, in order to shape the readiness of future translators to use modern technologies and tools in translation, it is necessary to improve the process of their training, focusing on the formation of information competence in terms of its

components, in particular technological, including the study of cloud-based CAT systems.

Prospects for further research may be related to the study of the use of cloud-based CAT systems not only in independent, but also in the classroom work of students.

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