Conceptual Aspects of Interpreter Training Using Modern Simultaneous Interpretation Technologies

Rostyslav O. Tarasenko[1], Svitlana M. Amelina[1] and Serhiy O. Semerikov[2,3,4,5]

[1]National University of Life and Environmental Sciences of Ukraine, 15 Heroiv Oborony Str., Kyiv, 03041,Ukraine
[2]Kryvyi Rih State Pedagogical University, 54 Gagarin Ave., Kryvyi Rih, 50086, Ukraine
[3]Kryvyi Rih National University, 11 Vitalii Matusevych Str., Kryvyi Rih, 50027, Ukraine
[4]Institute of Information Technologies and Learning Tools of the NAES of Ukraine, 9 M. Berlynskoho Str., Kyiv, 04060, Ukraine
[5]University of Educational Management, 52A Sichovykh Striltsiv Str., Kyiv, 04053, Ukraine

Abstract

The article deals with the implementation in universities of conceptual changes in interpreter training in the context of modern simultaneous interpretation technologies. The idea of human-computer interaction as an alternativeless symbiosis for achieving qualitatively new levels of organisation, implementation and efficiency in the simultaneous interpreting process is substantiated. The implementation of the concept of information technology training of interpreters in the content aspect provides for the expansion of their knowledge and skills in the application of information and communication technologies in the preparation and processing of simultaneous interpretation. The practical implementation of the concept in the form of formation of information and technological competence of a simultaneous interpreter is proposed. The ways of forming this competence are defined.

Keywords

human-computer interaction, simultaneous interpreting, information technology training of interpreters

1. Introduction

1.1. The problem statement

Training of interpreters, including simultaneous interpreters, should aim to minimise the gap between professional processes, and interpreter readiness. Trends in the translation industry show a growing volume of content that needs to be translated. This is due to the globalisation of economic, cultural, scientific and other processes. The problem can either be solved by training more translators or by making them more efficient by introducing the latest technology, which should of course be based on information and communication technologies. The first way is

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r_tar@nubip.edu.ua (R. O. Tarasenko); svetlanaamelina@ukr.net (S. M. Amelina); semerikov@gmail.com (S. O. Semerikov)
https://nubip.edu.ua/node/8833 (R. O. Tarasenko); https://nubip.edu.ua/node/6245 (S. M. Amelina); https://kdpu.edu.ua/semerikov (S. O. Semerikov)
0000-0001-6258-2921 (R. O. Tarasenko); 0000-0002-6008-3122 (S. M. Amelina); 0000-0003-0789-0272 (S. O. Semerikov)

unlikely to solve the problem, as the human factor has certain limitations to its potential. At the same time, the current state of technology proficiency in translation is not able to fully meeting the need for quality translation. Therefore, in the short term, the most advantageous strategy is to train translators with a high level of information and technological competence.

1.2. The purpose of the article

The purpose of the article is to justify the expediency of conceptual changes in interpreter training in the context of modern simultaneous interpretation technologies and to identify ways of developing their information and technology competence as the basis for these changes.

1.3. Literature Review

Researchers have recently been increasingly considering implementing changes to the training of simultaneous interpreters in order to bring it up to date with modern developments in information and communication technologies. In particular, Carl and Braun [1] emphasize that the availability of web or cloud-based videoconferencing services, as well as access to them on tablets and other mobile devices, raises new questions about the feasibility of translation through these systems. In their view, interpreters should be involved in the planning and implementation stages, and a gradual implementation of the new technology is recommended [1]. The usefulness of information and communication technologies is noted even in studies of language training of interpreters [2, 3, 4, 5]. Pym [2] believes that universities can diversify interpreter training programmes by offering studies in specialised areas of translation, computer skills, familiarisation with new technologies and the like. Enríquez Raído [6] focuses on the development of Internet information literacy in translator training and stresses the important role that information skills, especially web search skills, should play. The European Union Directorate, published in 2014, notes that the simultaneous interpreter "increasingly has to use a computer and use various search functions. When the microphone is on, there is no time to search in dictionaries or encyclopaedias" [7, 6]. Acknowledging the lack of systematised training materials on modern information technology in simultaneous interpreting, and recognising the need to support the self-study of interpreters, Rütten et al. [8] began work on developing support materials for interpreters on the use of RSI technology.

Horváth [9] focused on the special features of training interpreters in the Digital Age, looking mainly at new technologies for training conference interpreters. An integral part of the work of a modern interpreter is, in his opinion, interpreting-specific glossary management software: InterpretBank, Intragloss, Interplex, LookUp, Terminus, Interpreter's help [9]. Sánchez [10] points out an increasing number of universities worldwide that offer advanced interpreter training curricula. They take into account the needs of the translation market and the rapid development of new technologies.

Given the above, implementing conceptual changes in interpreter training programs is becoming increasingly urgent.

2. Result and Discussion

2.1. Technological competence as a component of interpreter certification programmes

The implementation of conceptual changes in the educational process means rejecting dogmas and outdated ideas of a large proportion of teachers about the translation process, reorienting them towards a positive perception of modern technology and motivating them to move towards a new concept of translator training. This concept is based on the idea that we should not compare, contrast human and computer capabilities in the translation process, but see their interaction as a non-alternative symbiosis to achieve qualitatively new levels of organisation, implementation and performance of the process. The implementation of this concept involves transforming the training process of translators, with a focus on learning the latest technological developments in the field of translation. At the same time, the focus on the development of their linguistic knowledge must not be diminished. Designing the educational process of translator training according to this concept envisages significant changes in the learning objectives, and consequently in the content, forms and means. The new goals should be the compulsory formation of information and technological competence of an interpreter, which undoubtedly requires shifting his/her training to the plane of technologisation. The need to develop the information and technological competence of simultaneous interpreters and then to introduce conceptual changes in their training in a university environment is, in our opinion, due to a number of global trends in the translation services provision, in particular:

- increasing the attention of clients of translation services to the performance of orders by certified translation agencies and certified interpreters,
- the growth in many countries of the specific need for certified interpreters who combine consecutive and simultaneous interpretation during court proceedings,
- expanding the offer of associations and institutions that certify translators to certify interpreters, supplementing the examination requirements for their qualifications with a technological aspect.

In understanding the concept of interpreter certification, we rely on the following definition: “Certification means that an interpreter or translator has been tested by a government or professional institution with certifying authority, using a statistically valid, professionally designed exam” [11].

The most common types of certification in the United States of America include American Translators Association (ATA) certification, Federal Court and State Court certification (for interpreters) and others. In order to understand the importance of the technological aspect of the qualification of candidates for simultaneous interpreting certification, it is worth noting that simultaneous interpreting examinations include, for example, the interpretation of audio recordings of court proceedings or trials using appropriate equipment [12].

The only official accreditation body for interpreters in Australia is the NAATI (National Accreditation Authority for Translators and Interpreters), an Australian government body. Certification of interpreters, including simultaneous interpreters, is based on a set of interpreter competencies: language, intercultural, research, technological, thematic, interpretation, ethical

and service delivery competencies. Technological competence presupposes knowledge of translation technologies, skills to translate by means of information and communication tools and a wide range of information and communication technology skills that an interpreter should have in order to prepare and provide translation services (knowledge and use of the Internet, software and hardware). Given that simultaneous interpretation using information and communication media is now a standard form of work for many interpreters, the content of technological competence covers the ability to work with conference interpreting equipment, telephone interpretation, and video or screen translation, the use of portable audio equipment and new areas of interpretation in a multimedia context. This also applies to the increasing use of technology by participants in the various activities for which translation is being carried out, such as the use of audio-visual media, as well as the remote participation of one or more parties [13].

It is worth noting that there is a growing number of university programmes among leading American and European universities that not only introduce modules into the training content of interpreters and those that facilitate the development of their technological competence, but also offer certification of interpreting [14, 15].

2.2. Developing information and technological competence as a basis for conceptual change in the training of simultaneous interpreters

In our previous research, we have defined the essence of information competence of translator, its structure, and the conditions of its formation in the process of professional training. However, these results are tested for the training of technical translators, as automated and machine translation technologies are already widely used in this field. In recent times, simultaneous interpreting has undergone significant changes in both technology and tools. This leads, first, to the need to adjust the essence of information competence of an interpreter in the aspect of its transformation into information and technological competence of a simultaneous interpreter. Before defining the essence of the information and technological competence of a simultaneous interpreter, it is advisable to outline the range of his/her typical tasks, the available technologies that can be used to implement them and the list of tools that he/she can operate at the present stage.

The tasks performed by the simultaneous interpreter consist of performing several actions almost simultaneously: listening to the source language, understanding the content of the speech, translating it into the target language and speaking back. These activities take place at intervals of a few seconds and only slightly slower than the actual rate of natural speech. The complex process of simultaneous interpreting is divided into two main stages: listening and analysis (processes aimed at understanding, from analyzing the input sound waves to identifying words and interpreting the meaning of what is said) and production (processes from understanding the meaning to planning the utterance and executing the planned utterance in the target language).

Innovative technologies that have already become integral components of simultaneous interpreting, aimed at providing a qualitatively new approach in terminological support for the interpreter, or generally enabling a change in the way the interpreter interacts with the participants in an event where simultaneous interpreting is required. These are the application of

CAI (Computer-assisted interpreting), RSI (Remote Simultaneous Interpreting), ASR (Automatic Speech Recognition) [16]. In particular, CAI systems are now implemented as specialized software and aim to provide terminological support to interpreters during the different phases of simultaneous interpreting. Their main advantage is real-time access to terminology databases. The essence of RSI is that interpreters can perform simultaneous interpreting while away from the event, using a cloud-based platform to receive and transmit audio and video signals. Of course, such technology relies heavily on the use of Internet services and specialized software products.

Despite significant changes in the development of simultaneous interpretation technologies, one of the main tools of the interpreter is the interpreter's desk with its corresponding functions, which is an integral part of the simultaneous interpretation system. Its use implies the ability to perform a range of operations, such as selecting channels with input and output speech, connecting a headset and adjusting sound settings, controlling the microphone, performing interactive communication, and so on. However, the development of the latest technologies has also given rise to new tools that have in some cases complemented the traditional interpreter desk, and in other cases replaced it. In both cases, the latest tools are specialized software and a personal computer with an Internet connection.

Given the tasks to be performed by the simultaneous interpreter, the technologies of their implementation and a set of modern tools, the information and technological competence of the simultaneous interpreter will be understood as his/her ability to receive and process the signal with input speech and translate it into the target language with subsequent implementation of the target online algorithm of the audio signal with translated speech of adequate quality to the listener through the use of the necessary set of information resources, software, organizational measures and technical devices. Only a person with the appropriate technical equipment and the way to connect him/her to the simultaneous interpretation system, functioning with the appropriate technology, may be a listener.

Considering the essence of the above information and technological competence of a simultaneous interpreter, in our opinion, will allow to focus on the peculiarities of the interpreter's work when implementing simultaneous interpretation using information and communication technologies in the process of interpreter training.

2.3. Content aspect of information technology training of simultaneous interpreters

The implementation of the concept of information technology training of interpreters in the content aspect provides for the expansion of their knowledge and skills in the application of information and communication technologies in the preparation and implementation of simultaneous interpretation.

The acquisition of new knowledge, skills and abilities should be aimed at ensuring effective ways of:

- a targeted search for industry-specific texts on the Internet resources,
- the use of electronic translation sources to create multilingual glossaries,
- the structuring of terminological material by means of office software,

- the creation of electronic glossaries and terminology bases in specialised formats,
- the extracting subject-specific terminology from professional texts to glossaries and terminology databases,
- the use of specialised CAI modules to learn the terms to be used during the conference,
- control and transmission of audio and video streams via wired and wireless networks,
- connections to RSI network-based remote simultaneous interpretation systems,
- the use of CAI for terminological support of the simultaneous interpretation process,
- the use of interpreter desks of simultaneous interpretation systems (selection of channels for receiving the audio stream of the output speech and channels for transmitting the interpretation in the respective language).

Achievement of the above knowledge, skills and abilities implies the need for a set of measures aimed at radical changes in the focus on information and technological training of translators, by improving the content aspect of the curriculum and optimising the structural and logical scheme of its implementation. Content changes can be ensured by adjusting the list of courses, modifying the content of selected disciplines, developing and implementing new modules and issues. At the same time, changes in content should be accompanied by the construction of a new sequence logic for those courses that have the greatest impact on the formation of information and technological competence. This should be subject to the need for gradual mastering of the elements of working with terminological information and tools for its processing.

Despite the rather impressive list of courses included in the interpreter training curriculum and aimed at a wide range of professional interpretation activities, including simultaneous interpreting, only a limited number of them can be modified in terms of their content to ensure their impact on the formation of elements of information and technological competence of the simultaneous interpreter. In particular, such changes can be implemented in the course "Fundamentals of Informatics and Applied Linguistics", designed to study the basic elements of working with information, the special course "Information Technology in Translation Projects" and the courses of the profession-oriented block – "Practical Course of Interpretation and Translation", "Scientific and Technical Translation", "Aspect Translation".

An important task of implementing the proposed concept is to change the above-mentioned courses and to build an optimal structural and logical scheme of their study, aimed at shaping the information and technological competence of the simultaneous interpreter. It is advisable to base such work on the method we have developed and tested for unifying the study of single-type operations that are common to different translation systems [14]. In particular, based on the results of our research and the main points of this method of unification, it is advisable to concentrate within the computer-oriented disciplines studied in different years of study on the block mastering of operations with information resources, differentiated by the level of its technologisation. The basic knowledge and skills for working with terminology information are established in the discipline "Foundations of Computer Science and Applied Linguistics", which is taught in the first year of study. Based on this approach, a combination of working with terminology resources, such as a targeted search for industry-specific texts on the Internet, the use of electronic translation sources to create multilingual glossaries and the structuring of terminological material using office software, is promising for this course. The

basis is the existing potential of the content of the course, which explores similar aspects of the work, but in the context of training the translator to carry out the written translation.

Following this logic, the more complex activities of retrieving, structuring, organizing, searching, using, communicating terminology resources, which require the use of specialized software for these purposes, should be mastered in the senior years of study. In particular, the course "Information Technology in Translation Projects", which is studied in the third year, should include training tasks aimed at creating electronic glossaries and terminology bases of specialized formats; extracting industry-specific terminology from professional texts to glossaries and terminology bases; managing and transferring audio and video streams through wired and wireless networks; connecting to RSI network systems for remote simultaneous interpretation. Although a considerable part of the content of this special course is designed to provide knowledge, skills and abilities to ensure effective ways of performing similar actions in automated translation systems (CAT systems), studying them in parallel with a focus on the peculiarities of CAI systems will provide a systematic view of such operations and reduce the time required to master them as compared to studying separately.

However, it is quite difficult to ensure the full formation of the information and technological competence of a simultaneous interpreter within the framework of the above courses, primarily due to the lack of time budget. This is due to the rather wide range of specialized knowledge, skills and abilities required for mastering, which are state-of-the-art given the level of modern technologies in simultaneous interpreting. They can be acquired through the study of other courses, but this is not embedded in the content and structure of any of the existing courses of the interpreter-training curriculum. Therefore, it is promising to introduce a separate section in the course "Scientific and Technical Interpretation", providing for the acquisition of simultaneous interpretation skills with terminological support by means of CAI. In the course "Aspect Translation", it is useful to learn and practice techniques to prepare for simultaneous interpretation by mastering the terms that will be used during the conference, using specialized CAI modules. Practical skills in the use of interpreter desks for simultaneous interpreting systems are logically developed through a number of laboratory units that form a separate module of the "Practical Interpretation and Translation Course". The laboratory work of this module should focus on the skills of selecting channels with input speech, operating the microphone and headset, managing the quality of the audio stream, selecting channels for translation into the appropriate target language and the like. It is important to note that the three above-mentioned disciplines are taught in the fourth year of study. Such a selection of courses, ways of their modification, sequence of study and focus allows building a logical sequence of processes of mastering common approaches to working with information resources, software and ways of their use of modern simultaneous interpretation technologies, which contributes to the formation of information and technological competence of the interpreter.

2.4. Forms and means of information technology training for interpreters

The concept of information technology training for interpreters cannot be fully realized without establishing a functional system of activities for practicing practical skills in the laboratory according to the theoretical provisions. Simulation of typical professional tasks of a simultaneous interpreter in a laboratory environment using real state-of-the-art tools in the form of

technical equipment and software should be the key to forming a high level of information and technological competence. With this in mind, we have defined a list of basic requirements for such a laboratory, namely:

- providing modelling of modern simultaneous interpretation technologies (traditional, CAI, RSI),
- the possibility of practising the interpreter function under simultaneous interpreting process conditions using different tools depending on the technology,
- the possibility of practising the interpreter desk when the input and output channels are changed,
- the possibility of interpreting using CAI,
- allowing two translators to work in parallel using different target language channels,
- the possibility of unilateral interpretation from different source languages,
- the possibility of "relay" interpretation, the possibility of bilateral interpretation.

Given that one of the key requirements in this list of requirements is the simulation of real technological processes, it is important to clearly understand their sequence, the way the interpreter interacts with the participants in the event for which the simultaneous interpretation is provided, the direction of audio streams and the list of necessary technical equipment. To this end, we have developed schematics reflecting these aspects for different technologies. In particular, Figure 1 shows a schematic of the simultaneous interpretation process using a system with a traditional set of equipment based on infrared radiation.

According to the above scheme, a block of laboratory work was designed to acquire skills in operating the interpreter desk, receiving and processing the signal with input speech, performing translation and transmitting the audio signal with translated speech to the listeners.

Figure 2 shows a schematic of the simultaneous interpreting process using a traditional set of equipment augmented with a CAI system.

Laboratory unit in which the work of an interpreter is practised according to a given workflow scheme makes it possible to consolidate the skills of the interpreter desk during simultaneous interpreting and to develop the skills using terminology support through CAI systems.

Figure 3 shows a schematic of the simultaneous interpretation process using RSI technology.

Unlike the two previous technologies, the operation of an interpreter using RSI technology has significant differences. The main difference is that this technology does not involve the use of an interpreter desk. In addition, the interpreter has no visual contact with the speaker and other participants in the event. In a laboratory setting, this situation is simulated by visually isolating the interpreter's workplace from the audience. Therefore, a block of laboratory work on this technology is aimed at developing the skills of working with a cloud-based remote translation platform, performing simultaneous interpretation with the reception of the audio signal via the Internet and its perception through headphones and relying on video images of the speaker's presentation on a monitor screen.

3. Results of the teacher survey and discussion

In order to improve the technological training of simultaneous interpreters, we conducted a survey of teachers in the language departments that provide teaching of professionally oriented

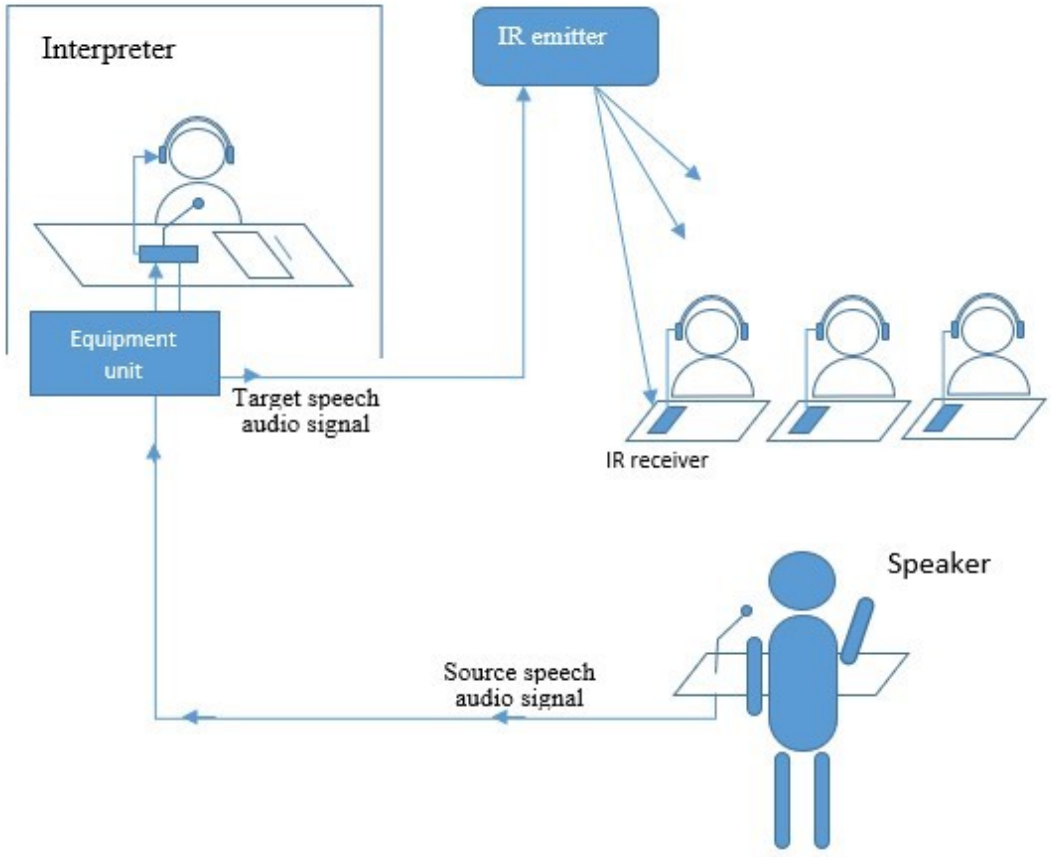

Figure 1: Schematic of the simultaneous interpreting process using a traditional set of equipment.

courses of the curriculum. In order to identify their attitudes towards the proposed concept of interpreter training, focusing mainly on the development of information and technological competence, and the possible correction of some provisions, they were offered a questionnaire containing ten questions. The questions in the questionnaire provided only two options for "Yes" and "No", which allowed us to more clearly identify their attitude to the proposed aspects, their vision of the positives and negatives, sense their mood and willingness to change. Seventeen teachers participated in the survey. The content of the questionnaire and the results of the survey are shown in Table 1.

The analysis of the questionnaires showed that, on the whole, the teachers had a positive perception of the proposed concept of simultaneous interpreter training and understood the need to orient the educational process towards the development of their information and technological competence. This is eloquently demonstrated by the answers to the second and fifth questions.

At the same time, the results of the answers to the third and fourth questions revealed a certain lack of readiness of some teachers to take the newest technologies of simultaneous

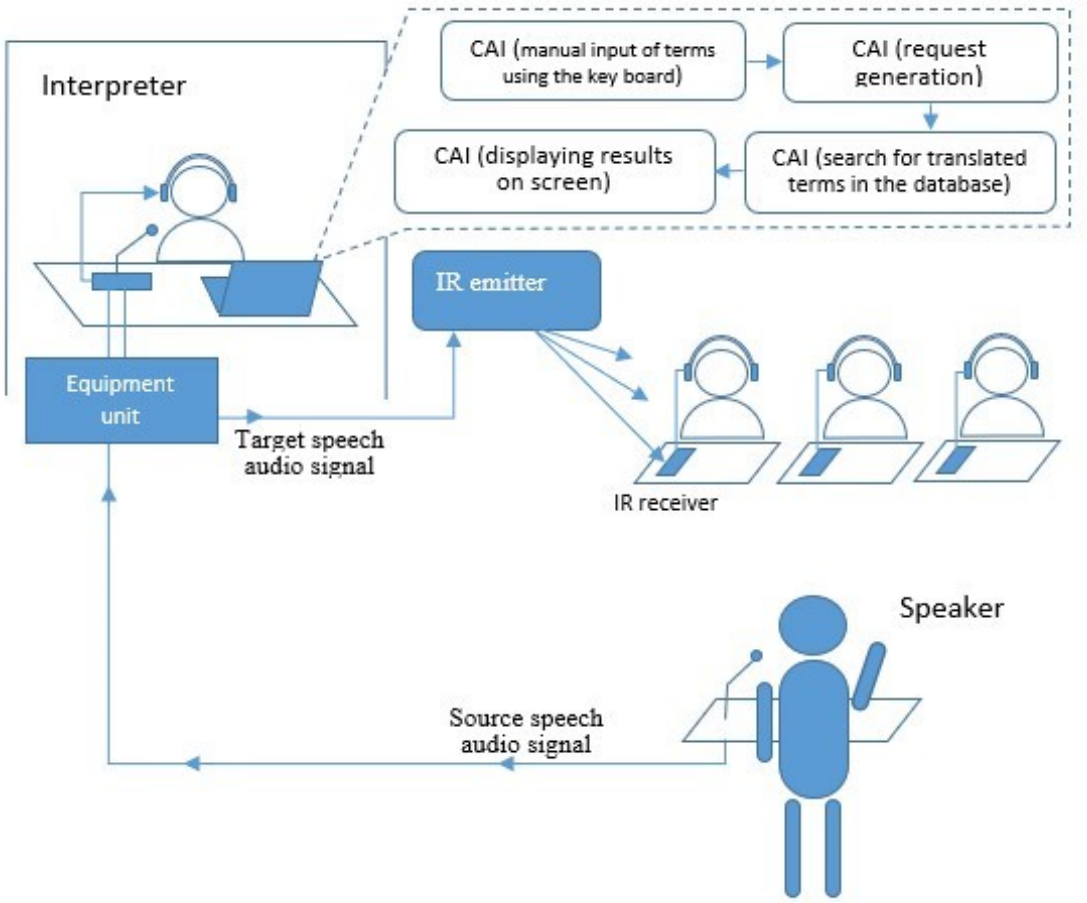

Figure 2: Schematic of the simultaneous interpreting process using CAI.

interpreting seriously and to understand the importance of their use in professional activities. The explanation for this, first, we see in the insufficient attention that teachers pay to their own professional development in the aspect of familiarising themselves with the latest technologies. Important, however, is their lack of confidence in the capabilities of CAI terminology systems, due to what they see as the inadequacy of such systems in terms of query input efficiency, obtaining relevant results, clarity of presentation and selection of correct choices, and so on. The long-standing belief of a certain category of teachers that only a high level of foreign language proficiency is sufficient for a successful performance also has a negative impact on the implementation of new approaches in training. The results indicate the need for a set of activities aimed primarily at promoting the latest technologies, making teachers aware of their benefits, technical features and the like. This can be organised through thematic round tables, meetings with practising interpreters, master classes, further training at translation agencies, and participation in conferences using the latest simultaneous interpreting technologies.

Despite the rather low percentage of positive answers to the sixth and eighth questions,

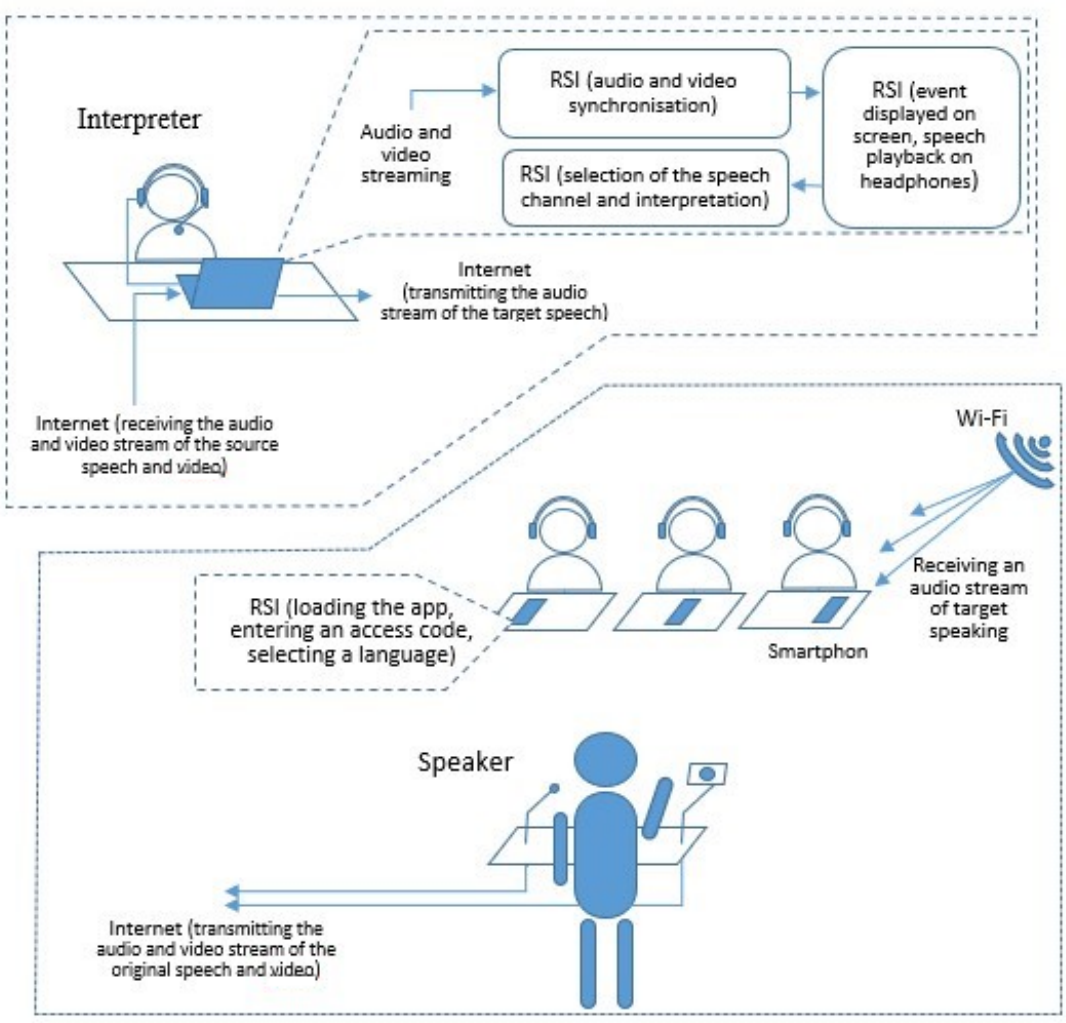

Figure 3: Schematic of the simultaneous interpretation process using RSI technology.

confirming the insufficient level of implementation of learning the latest technologies in the content of the teaching process, teachers in the questionnaire expressed their readiness to implement changes (question 7). This indicates that not only a significant part of courses has a significant potential to form elements of information and technological competence, but also teachers are willing to implement such work. At the same time, it was pleasant to note that the high percentage of answers to questions 9 and 10 indicates teachers' understanding of the role of the specialised laboratory and laboratory works as the main form of organising the process of forming technological skills and abilities in this process. In turn, this requires a new approach to the organization of the study of courses, the content of which will be integrated topics, sections, modules aimed at the formation of information and technological competence of simultaneous interpreters. It should ensure that the relevant part of the course is studied in a

Table 1
Results of a questionnaire survey of teachers to determine their attitudes towards the proposed concept of interpreter training

Question	Response options, %	
	Yes	No
In your opinion, is only a high level of proficiency in a foreign language sufficient for the interpreter to perform his or her professional tasks fully in today's work environment?	64,7	35,3
Do you support the main idea of the concept of training simultaneous interpreters that a high level of language and information and technology knowledge should be developed in the training of simultaneous interpreters?	88,2	11,8
Do you pay enough attention to keeping up to date with current trends in simultaneous interpreting and learning about new technologies?	41,2	58,8
Do you find the use of CAI technologies really promising in terms of terminological support for interpreters in simultaneous interpreting?	47,1	52,9
Do you think that in today's stage of development of simultaneous interpretation technologies, an interpreter should have a high level of information and technological competence?	76,5	23,5
Are there issues, units or modules in the content of the courses you teach that focus on the latest technologies in simultaneous interpretation, based on the use of information technologies?	29,4	70,6
Are you ready to incorporate issues, sections or modules into the content of your course that contribute to the information and technological competence of a simultaneous interpreter?	64,7	35,3
Do you emphasize the study of modern simultaneous interpreting technologies in general or specific aspects in the teaching of your courses?	35,3	64,7
Do you think that the formation of information and technological competence is not possible without a specialized laboratory where the conditions for simulating the implementation of the latest simultaneous interpretation technologies should be provided?	88,2	11,8
Is it correct to organize the information and technological competence formation process in such a way that the basic skills and abilities in applying the latest simultaneous interpretation technologies are practiced in separate blocks of laboratory work, rather than separately in different courses?	82,4	17,6

specialised laboratory, practising relevant aspects of the latest technologies.

4. Conclusions

Based on the results of this study, it can be concluded that the modern development of simultaneous interpretation technologies requires the implementation of a new concept for the professional training of simultaneous interpreters at universities. This concept is based on the idea that human-computer interaction should be seen as a symbiosis without alternative in order to achieve qualitatively new levels of organisation, implementation and efficiency in the simultaneous interpreting process. The practical embodiment of the concept should be

the formation of information and technological competence of the simultaneous interpreter, which provides his ability to receive and process the signal with input speech and its translation into the target language with the subsequent implementation of the algorithm of target online transmission of audio signal with translated speech of proper quality to the listener, using the necessary set of information resources, software, organizational measures and technical devices.

The main ways and conditions to ensure the formation of information and technological competence of a simultaneous interpreter are:

- differentiating the stages of learning information technologies in interpretation by level of difficulty and relating them to the levels of mastery of interpretation technologies in the respective years of study,
- modernization of the selected academic courses content in terms of broadening the scope of knowledge and skills in the application of information and communication technologies in the preparation and process of simultaneous interpreting,
- applying a way of unifying the study of similar operations that are common to different systems in translation and interpretation,
- creating and using a specialized simultaneous interpretation laboratory that meets specific requirements.

The key to the success of the proposed concept is the teachers' readiness to perceive the latest technologies of simultaneous interpretation and their proper level of familiarity with them. This can be facilitated by a set of activities that include promoting the latest technologies of simultaneous interpretation, making teachers aware of their features and advantages, and teaching them modern tools for implementing such technologies.

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