

**MULTIMODALITY OF THE TRANSMISSION OF PHILOLOGICAL
KNOWLEDGE DURING CLASSROOM ACTIVITIES USING ICT**

***MULTIMODALIDADE DA TRANSMISSÃO DE CONHECIMENTOS FILOLÓGICOS
DURANTE ATIVIDADES DE SALA DE AULA USANDO AS TIC***

***MULTIMODALIDAD DE LA TRANSMISIÓN DE CONOCIMIENTOS FILOLÓGICOS
DURANTE LAS ACTIVIDADES DE AULA UTILIZANDO LAS TIC***

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ABSTRACT: The article deals with multimodal learning strategies aimed at transferring philological knowledge with the help of information and communications technology (ICT). Using ICT makes it possible to apply visual association and create spatial images that express important object properties defined clearly by the means of dynamic visualization (animation). The authors note that using ICT in the sphere is associated with several methodological difficulties, since it requires a philologist-educator who possess a wide range of competences that go beyond humanitarian knowledge. The optimum software that allows creating audio-visual construct (interactive poster, computer animation, tag cloud, cognitive map etc.) is offered for studying process. The paper presents the results of sociological research on the readiness of students of philological specialties in pedagogical universities along with the teachers in different educational units for implementation of multimodal strategies of teaching using ICT. The authors proved the need to introduce an integrative course “Use of ICT in the study of philological disciplines”.

KEYWORDS: Multimodal learning strategies. Classroom activities. ICT Technologies.

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RESUMO: O artigo trata de estratégias de aprendizagem multimodal destinadas a transferir conhecimento filológico com o auxílio das tecnologias de informação e comunicação (TIC). O uso das TIC torna possível aplicar associação visual e criar imagens espaciais que expressam propriedades de objetos importantes definidas claramente por meio de visualização dinâmica (animação). Os autores observam que o uso das TIC na esfera está associado a uma série de dificuldades metodológicas, uma vez que exige que um filólogo-educador possua um amplo leque de competências que vão além do conhecimento humanitário. O software ideal que permite a criação de construções audiovisuais (pôster interativo, animação por computador, nuvem de tags, mapa cognitivo etc.) é oferecido para o processo de estudo. O artigo apresenta os resultados de pesquisas sociológicas sobre a prontidão de alunos de especialidades filológicas em universidades pedagógicas junto com professores de diferentes unidades de ensino para implementação de estratégias multimodais de ensino por meio das TIC. Os autores comprovaram a necessidade de introdução de um curso integrativo “Utilização das TIC no estudo das disciplinas filológicas”.

PALAVRAS-CHAVE: Estratégias de aprendizagem multimodal. Atividades de sala de aula. Tecnologias TIC.

RESUMEN: El artículo trata sobre estrategias de aprendizaje multimodal destinadas a transferir conocimientos filológicos con la ayuda de las tecnologías de la información y la comunicación (TIC). El uso de las TIC permite aplicar asociaciones visuales y crear imágenes espaciales que expresan propiedades importantes del objeto definidas claramente por medio de visualización dinámica (animación). Los autores señalan que el uso de las TIC en el ámbito se asocia a una serie de dificultades metodológicas, ya que requiere que un filólogo-educador posea un amplio abanico de competencias que van más allá del conocimiento humanitario. Se ofrece el software óptimo que permite crear construcciones audiovisuales (póster interactivo, animación por computadora, nube de etiquetas, mapa cognitivo etc.) para el proceso de estudio. El trabajo presenta los resultados de una investigación sociológica sobre la preparación de estudiantes de especialidades filológicas en universidades pedagógicas junto con los docentes de diferentes unidades educativas para la implementación de estrategias multimodales de enseñanza utilizando las TIC. Los autores demostraron la necesidad de introducir un curso integrador “Uso de las TIC en el estudio de disciplinas filológicas”.

PALABRAS CLAVE: Estrategias de aprendizaje multimodal. Actividades de clase. Tecnologías TIC.

Introduction

The reform of educational standards, the modernization of higher education, social changes, including those that were triggered by recent challenges (quarantine due to the COVID-19 epidemic) have led to the transition of the traditional education system to an informative model, where ICT plays a significant role. System innovations that form an outline of today’s globalized world, such as the ever-expanding information flows and the pace of knowledge updating, are revolutionizing the learning process. Technological changes and the

development of ICT have shaped new tasks based on cross-disciplinary dialogue expanding the arsenal of technical means of implementing various semiotic codes. All this has influenced the practical manifestations of multimodal philological education, which is conditioned by combination of verbal and non-verbal codes and is achieved using ICT.

In this aspect, the learning process appears as a transformative activity carried out through various forms of communication. Such an approach necessitates a change in the learning matrix towards an extension of the freedom of life-creation, a technologically determined increase in the creative component that forms the newest environment of meanings. The leading type of national resource, which is formed within the educational system, is multi-faceted intelligence. It provides the ability to compete on the world stage, to generate scientific and economic potential, and thus to improve the living standard of all participants of that social development. The latest social transformations are changing the educational paradigm, which “aims at information generation and production of creative ideas” (YAREMENKO; KOLOMIETS, 2019, p. 491).

The changing modes of the educational paradigm have caused the need of the widespread usage of ICT in the teaching of humanitarian disciplines. The multimodality of education has determined the emergence of new forms of communication that synthesize codes of different modalities. System innovations, which form the outline of today's globalized world, cause fundamental changes in the educational process. The introduction of productive pedagogical concepts, the widespread usage of the ICT potential to achieve the goals of sustainable development should be considered the primary initiatives (UNESCO, 2019).

The application of ICT in the humanities is related to the number of methodological difficulties, since it requires a philologist educator to possess a wide range of competences beyond the humanities. If the combination of speech, gestures, writing, diagrams, tables, musical accompaniment has long become an organic feature of a multimodal educational process, then a number of issues of practical application of ICT to express the graphic modus, the use of the spectrum of semiotic resources is still problematic. The current state of teaching of philological disciplines in institutions of higher and secondary education in Ukraine is characterized by a lack of ICT involvement, which affects the level of media literacy, narrows the range of communication opportunities of future vocabulary teachers. The potential of using ICT in the courses on History of Ukrainian Literature, History of Foreign Literature, Theory of Literature, Contemporary Ukrainian Literary Language, and others is not sufficiently applied. Such situation is unacceptable in terms of communicative restrictions caused by quarantine and requires improvement of the content and form of educational content with the possibility of

interactive cooperation to engage and motivate students. Therefore, it is promising to implement a multimodal strategy for philological education using ICT, where students and professors are free to use digital technologies during their classes.

Analysis of Publications

The problem of implementing multimodal learning strategies using ICT tools has a wide scientific coverage. Laaser and Toloza (2017), Voronkin (2019), Rice, Beeson and Blackmore-Wright (2019) and others addressed the issue of the use of video resources in the educational process of higher educational institutions in order to improve the quality of students' education. Possibilities of using 3D technologies in the educational process were considered by such researchers as: Yashyna, Krupnyk and Karpenko (2016), Ford and Minshall (2019) and others. The advantages of using multimodal texts in the humanities are highlighted by Oskoz and Elola (2016), Domínguez Romero, Bobkina and Stefanova (2018) etc., appealing to the fact that multimedia is primarily a computer technology, which not only allows flexible management of the flow of various information resources (text hypertexts, graphics, music, video with different types of images), but also forms a new approach to teaching the humanities. This causes a fundamentally different – synergistic – impact on the senses of the learner, as media technology broadcasts industry information in vivid figurative forms, creating conditions for dialogue between cultures in a multicultural world. Generalization of the above, a thorough analysis of the scientific achievements of researchers in the field of media technologies, the principles of their effective implementation (multimedia principle, spatial principle (virtuality), integration principle, redundancy principle (presentation of information using various multimedia elements), the principle of availability in time and space) to assert that the content of teaching philologists is about media culture, about the modern digital way of expressing ideas that determine the determinants and aesthetic principles of artistic directions.

It should be noted that in the scientific literature some problems of multimodal educational strategies with the use of ICT in teaching students of philological specialties are considered. In particular, multimodal scenarios of student collaboration during role-playing games using Web 2.0 tools for translating authentic texts are explored in the article by Prieto-Velasco and Fuentes-Luque (2016). Maia's (2016) intelligence focuses on the professional competencies of future translators in a globalized world and the importance of developing the ability to use the latest software; the leading requirements for university teachers who train such specialists have been identified. Researchers Kucheruk *et al.* (2019) provided recommendations

for the use of electronic educational resources, which can take the form of both multimedia products and online information resources. The specifics of the synergetic effect of the combination of words and multimedia projection learning tools during the lecture were studied by Klochek and Baraniuk (2019). In accordance with the principle of synergetic presentation of industry information, the study of fiction involves acquaintance with the achievements of painting, graphics, architecture, sculpture, etc., which can best be done by involving media resources. Positive aspects of language learning with the help of ICT and innovative technologies were studied by Dooly (2018), Ikonnikova and Komochkova (2019), Sorokina and Smovzhenko (2018). In the work of Olivia and Shaklein (2019) the possibilities of involving new technologies, in particular the software products Compleat Lexical Tutor and ABBYY Compeno in conducting literary and linguistic analysis of the text are considered.

Modern anthropogenic challenges (incidence of COVID-19, strict quarantine bans) have necessitated understanding the specifics of the optimal organization of distance education in educational institutions of various types. Recently, several articles have been published to study the problem of using ICT in the process of distance learning. Thus, in the article by Osadchy, Osadcha and Kruglyk (2020), an overview of Internet resources that promptly responded to the needs of the time and contains content focused on the implementation of the educational process in a pandemic and quarantine. In the works of I. Baranovska (2020), Zozulia, Pozdran and Slobodianiuk (2020), Olkhovska (2020) and other researchers outlined the didactic possibilities of studying philological disciplines with the involvement of ICT in the process of distance learning not as an auxiliary to the traditional in open communication, but as the main.

Status statement of implementation ICT into philological education process

We interviewed students of philology (114 respondents Kryvyi Rih State Pedagogical University). It is suggested to answer the following questions:

Does the use of ICT in your learning process help you to gain professional knowledge?

Do you use media services that focus on audio visualization of content?

Do you have enough ICT skills already acquired?

Would you attend an integrative IT training course?

Do you plan to integrate ICT in future pedagogical activities?

Most students (98.5%) showed a strong interest in the problem. 65.1% of respondents said that they lacked the systemic knowledge and skills to use special programs for cognitive imaging of philological knowledge. 84.4% of students expressed a desire to attend a special

course aimed at building IT competencies. Most senior students have shown a lack of IT skills after completing a teaching pedagogical internship. 100% of the respondents said that the use of ICT has significant didactic potential and they plan to use it in future pedagogical activities.

In addition, the use of ICT in the educational process by teachers of the philological faculties of the KSPU is analyzed. The processing of the questionnaires made it possible to carry out both statistical and meaningful analysis. It is revealed that 88.4% of 29 persons of the total number of respondents, have modern ICT. 71.4% of those surveyed systematically use media technology to create animation, an interactive poster, a mental map, and other audiovisual content. 95.2% of respondents expressed interest in the problem of using ICT in educational practice. All KSPU faculty members interviewed noted the positive impact of ICT courses in full-time (combined education) (basic and advanced level) organized at the university. They pointed out that such educational activities stimulated them to improve their teaching strategy, to actively involve different forms of visualization of educational material, to increase their attention to updating methodological tools with the use of special software. 91.8% of teachers admitted that practical training was the main source of knowledge.

The results of interviewing, questioning, observation, analysis of the level of learning activity are sufficient arguments to stimulate systematic activity for the formation of IT competence in the preparation of a future vocabulary teacher.

Model the use of ICT as a comprehensive means of implementing multimodality in the teaching of humanities

The observation of the state of ICT in the process of philological education allowed us to justify the need to design models using ICT as an integrated multimodality implementation tool in teaching humanities (Fig 1.).

The educational philological paradigm, based on monomodality, is significantly inferior to the system, which is based on the combination of modalities for the construction of the latest information structure, which integrates different ways of presenting educational content. The synthesis of the visual and verbal series, the recognition of graphic and visual elements as self-contained carriers of a certain reality, have caused the iconic turn (BOEHM; MITCHELL, 2009). Dynamic perception by the recipient of educational information is possible under the conditions of integration of speech, visual, tactile components. ICT in a multimodal channel combines visual images, texts, sound. Developed by Mayer (2010), the cognitive model of multimedia CTML (The Cognitive Theory of Multimedia Learning), certifies that the process

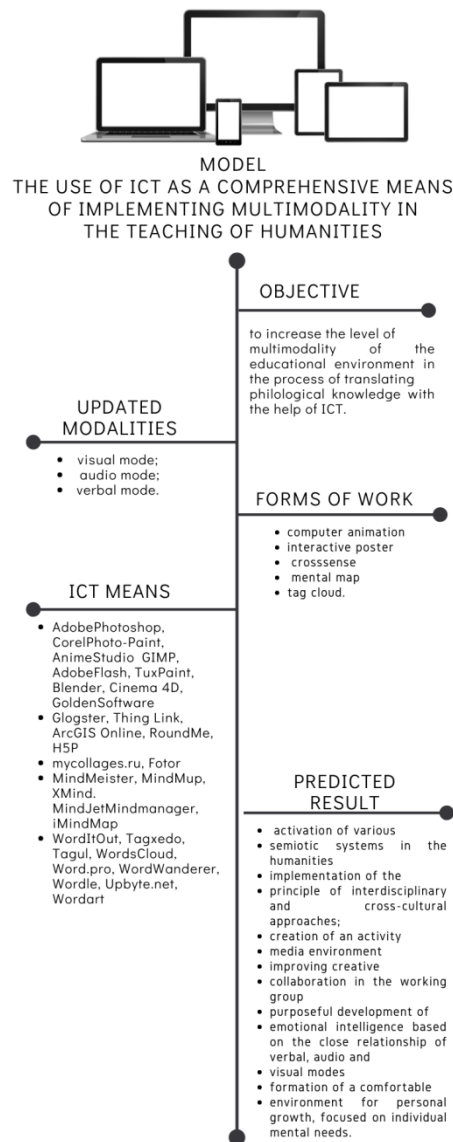
of assimilation of information creates both verbal and visual components that contribute to the activation of working memory under the condition of their synchronous use. According to the CTML Guidelines, bandwidth for these channels is limited. The training includes filtering, separation and integration of the information obtained based on existing knowledge. For optimal learning, students should avoid using large parts of printed text. After all the last one, by overloading the visual channel by transforming characters from a symbolic channel into a quasi-phonetic channel, draws attention.

Modern philological education is based on linguistic and technological factors. The use of ICT makes it possible to apply visual associations, to create spatial images that reflect the important properties of the object, and dynamic visualization (animation) also allows you to outline it. An important condition for the integration of these technologies in the philological educational sector is the formation of IT competences both for teachers of higher education institutions, as well as for students-philologists, future teachers of secondary education. A multimodal strategy for the study of humanitarian disciplines with the use of ICT allows you to integrate media art objects, 3D art objects, applied multimedia, computer graphics and animation into the educational process.

Visualization is considered as the removal of mental images from the internal to the external in the process of educational activity through associative projections. We consider that creating a visual construct in the learning process, appealing to the principle of clarity, intensifies perception and engages into thinking, memory, imagination and personal experience.

In terms of the threat of the spread of COVID-19, educational institutions in Ukraine have been transferred to distance learning. To adequately reproduce the content of courses, to form the right strategy of online communication with the student audience, to choose the optimal services for monitoring knowledge, teachers must model the appropriate pedagogical design. The leading points that must be considered are the form of interaction between the teacher and students, the degree of involvement of the audience in the creation of educational content, forms of reporting and communication, technical support of the process (in distance learning it is BYOD). Most online platforms currently used in the process of distance education (Google Classroom, MOODLE, Mozaik Education etc.) allow the use of bright audio-visual content.

Figure 1 – Model the use of ICT as a comprehensive means of implementing multimodality in the teaching of humanities



Source: Devised by the authors

Computer animation, which is integrated into the courses of the History of Ukrainian and Foreign Literatures, the Theory of Literature, linguistic disciplines, promotes the development of creative and critical thinking, self-realization, and socialization of students, makes it possible to combine individual and group work. The use of animation in the philological cycle is an effective means of creating an emotional background for the perception of the topic, updating background knowledge, stimulating critical thinking and provoking discussion, refining analytical and synthetic processes.

When using computer animation, a set of learning objectives is implemented:

- actualization of actual knowledge in the process of writing the script for the video, structuring the available information;
- defining the visual component of the content;
- preparation of audio content of educational material;
- selection of software for project implementation.

Computer animations include classic (traditional), stop-motion, sprite animation, morphing, color animation, 3D animation, motion capture (Motion Capture), and more. There are many interactive video constructors. An analysis of the main properties of such software is given in table 1.

Table 1 – Characteristics of computer animation software

Name	License	Type of graphics	2D/3D	Animation	Operating system
AdobePhotoshop	Proprietary commerce	Raster	++	+	Microsoft Windows, macOS, Android[2], iOS[2] и Windows Phone[3]
CorelPhoto-Paint	Proprietary commerce	Raster	++	–	Microsoft Windows, Mac OS
AnimeStudio	Proprietary commerce	Vector	+/-	+	Microsoft Windows, Mac OS X, Linux
GIMP	Open	Raster	++	–	Linux, macOS, Microsoft Windows, FreeBSD, Solaris и AmigaOS 4
AdobeFlash (раніше MacromediaFlash)	Proprietary commerce	Raster/vector	++	+	Windows, macOS Linux, Solaris, BlackBerryTablet OS, Android (лишеplayer)
TuxPaint	Open	Raster	+/-	-	Linux, Microsoft Windows, macOS и Android
Blender	Open	Raster	++	+	Microsoft Windows, macOS, Solaris, FreeBSD, OpenBSD, GNU/Linuxта IRIX
Cinema 4D	Proprietary commerce	3D graphics	-/+	+	macOS, Microsoft Windows, Linux
GoldenSoftware	Commercial	Fractal	++		Microsoft Windows

Source: Devised by the authors

Lately, online applications have become particularly popular for creating animation clips. It is necessary to separate the editor to create animated clips and save them in HTML5, GIF and VIDEO - Animatron formats. It resembles a desktop AdobeFlash editor made in the web interface. Its features include native scripting language, layers, scenes, tools for drawing

vector shapes, importing bitmap or vector (svg) graphics, audio to a project. The condition for storing and publishing private videos in the service gallery is registration. The Slimber editor can also be used for drawing with the ability to record the entire process as an animated movie. Save work is only possible in the service gallery. To save the animation on your own computer, you need to install a screen capture program, such as oCam. A simple Canva editor is available in the mobile application. You can paste videos into pre-made templates for different topics, such as doing Instagram stories or Facebook covers. With CanvaPro Premium Subscription, you can add animations to your static designs and save them in MP4 format. By converting a set of photos into video clips, you can create stop-motion animations using the Stop Motion Studio mobile application. Rapidly changing frames allows you to achieve the “video” effect. Camera, software, and animation objects are required to prepare the content.

These applications can be used to carry out practical tasks in the humanitarian cycle. For example, the cognitive visualization of impressionistic images by M. Kotsyubynsky can be realized in the form of the animation album “Koloratyvy impressionizmu” (“Colors of Impressionism”). This work will allow to express the spectral characteristics of images and their symbolic load in the artistic picture of the prose world. During the implementation of the animation project “Polyfonia obraziv poezii P. Tychyny” (“Polyphony of Images in P. Tychyna’s Poetry”) the student group creative collaboration is successfully carried out. The development of an audiovisual panorama of an artist's early creativity requires collective collaboration, creativity, media literacy of all participants in the educational process. Another example would be the task of creating an animated encyclopedia of mythical characters in literary studies. Its implementation involves the implementation of a cross-cultural approach to the study of a range of topics and works. Cross-disciplinary stimulates interest in the process of learning foreign languages, contributes to the “effective understanding of the world literary process on the basis of communication of cultural and aesthetic principles” (KOLOMIETS, YAREMENKO, 2016, p. 169). In addition, by creating animated images of mythical creatures, students activate various modal channels. Similar work can be done on the material of such works as: Oleksa Storozhenko “Vidma” (“The Witch”); Mykhailo Kotsyubynskyi “Tini zabutykh predkiv” (“Shadows of Forgotten Ancestors”); Lesya Ukrainka “Lisova pisnia” (“Forest song”); Mykola Gogol “Vechory na khutori poblyzu Dykanky” (“Evenings on the farm near Dykanka”); Mykola Gogol “Viy” (“Viy”); Valery Shevchuk “Try lystky...” (“Three Leaves...”).

A work with multimodal texts creates the foundation for the future teacher's professional competence. Audio-visual images, which are components of the interactive installation, help to

get rid of information noise, to update the most relevant information on time. Among the cognitive visualization tools is a leading display case (interactive wall, touch screen, interactive screen). Interactive installations allow to interact with content in any format: educational, informational, entertaining. For their creation interactive tables or showcases, touch screens and video mapping and other equipment are used. Installations created with augmented reality technology allow to show imaginary objects, create a temporal or spatial illusion, transform the content, by updating the necessary information.

Constructive version of the installation is an interactive poster, which allows you to use visual, audio, verbal channels of perception of information. As a comprehensive didactic tool, the interactive poster enables you to map concepts and processes, analyze phenomena, refine and correct information. This encourages educators and students to actively collaborate creatively in the process of analyzing and modeling optimal meaning constructs.

Didactic benefits of interactive poster:

- the correct and simple interface created on the principle of a single screen;
- maximum activation of the visual channel of perception;
- creation of conditions for full interaction between the teacher and students;
- the ability to implement individual and group approaches in the learning process;
- educational information is designed as compact, logically complete units.

Creation of interactive poster is possible on different platforms. We will describe several most optimal, in our opinion. Glogster - a service that allows you to create a spectacular product, involving graphic, video, audio, text components, use ready-made templates, make hyperlink elements. It has a free segment. The Thing Link platform allows you to make ordinary pictures interactive, which is achieved by adding labels with text information or tips, links to audio, video or images. Created interactive poster is easily embedded in a blog or website. It can be edited by other users or remain private. Thing Link has a free segment with limited functionality.

The interactive didactic unit of ArcGIS Online allows you to create visual stories based on a variety of web maps. The principle of operation of the service is based on the use of basic maps, data layers, legends and navigation tools. The service contains many physical, political, historical maps, satellite images and more. This site requires registration using social networks or Goggle +. ArcGIS Online lets you create a free trial. There is an option for Android and iOS mobile devices. RoundMe is used to simulate panoramic photo stories. You can place an unlimited number of interactive tags with small text and pictures on the image. This tool enables

the teacher to create an interactive multidimensional model of the training episode. Ready-made templates for interactive content modeling include a handy didactic H5P constructor. Playground allows you to create exercises, games, quizzes, videos, presentations, interactive posters, collages and audio players. The service is free, the number of works created in it is not limited. H5P contains a number of good tools for gaming the learning process and allows you to embed your own construct into a series of LMSs or web pages using Embed code.

Figure 2 – Example of work on an interactive poster



Source: Devised by the authors

With these services, you can model multimedia travel maps of authors or literary characters. For example, while studying the works of Adam Mickiewicz, Taras Shevchenko, Lesia Ukrainka, Voltaire, and others, the presentation of the biography through an interactive map makes it possible to visualize a set of interdisciplinary knowledge. In the course of the course “History of Foreign Literature” (antique period), an Olympus multimedia map may be an element of the interactive poster “Mythology”. In the process of its creation, students compile a table-characteristic of East Slavic pre-Christian Olympus in comparison with ancient mythology, as well as the mythology of other peoples in Europe (optional).

An interactive poster allows you to visually implement the idea of integrative literary and linguistic studies. Within the framework of the writer's linguistic laboratory, it is worth paying attention to the peculiarities of the interpretation of the biomorphic codes of the national-

linguistic and cultural community. Forms of work such as juxtaposition of ornithological interpretations, fito-trips in Ukraine, and animalistic studios will be appropriate.

The crossense is what allows to create an active media environment. This associative puzzle helps to update the background knowledge, involves the participants in the process of analyzing the connections between concepts, identifies new nuances and nuances of their meanings, and more. Crossense can be used at any stage of the study of the topic, because it allows you to test the knowledge of texts, to identify the level of mastering students theoretical and literary concepts, to deepen the ability to analyze the poetic system of works and more. Given that the image with the text significantly changes the perception of its content, having a deeper emotional impact, based on the close interrelation of verbal and visual components, the creation of the inner form of the tokens of a particular group allows us to trace the connotative shades with the extrapolation.

Crossences can be designed with the help of collage software. Most software products work online. Thus, the free collage service, mycollages.ru, lets you simulate image compositions on both your computer and smartphone (without having to install the AppStore app). A powerful collage service is also Fotor. In addition to the classic ones, it also contains original customizable art templates (stickers, text, customization of the background).

Figure 3 – Example of working with a krossense

Task. Create a krossense puzzle on the topic: “Philosophy of harmony in the works of Yasunari Kawabata”, decipher it.



Source: Devised by the authors

A significant amount of optimally structured information broadcasts using a mental map. Creating this didactic object makes it possible to visualize meaningful logical connections between parts of the study material, to engage personal experience and to activate students' logical thinking. Supporting notes in the form of mental maps reproduce an integrated picture of the cultural phenomenon under study. The radial form of recording contributes to the focus on the conceptual concept. Associative words, graphic images, signs located on the branches of the mental map, outline the essence of the problem, outline ways to solve it, help to activate working memory. According to Buzan (2003, p. 14), the prerequisites for creating an intellectual map are the focus on the central image, verbal coding, maximum visual relief (use of different colors, three-dimensional fonts, graphic drawings, fonts of different sizes etc.). It is possible to visualize information through various services: MindMeister, MindMup, XMind, MindJet Mindmanager and others.

Modern approaches to language learning are often "framed in a much more multimodal context where learners enjoy greater agency and autonomy to produce language through digital forms" (BLAKE, 2016, p, 137). Static educational media forms, taking into account the lexicographic orientation of the corpus of modern Ukrainian, are determined by the following characteristics: common language (reproduction of the territorial specificity of the language system); fragmentation (the body is text fragments, selected according to predefined principles of selection of text data to the body); research orientation (focus on the range of literary and linguistic tasks); dynamics (involves constant updating and updating of many corpus texts); synchronicity and diachronicity (covering the level of the modern language system, as well as taking into account the historical stages of development); monolingualism / bi- and multilingualism (corpus text fragments are the result of linguistic activity of linguistic representatives) (MISHENINA; GUSHKO, 2016, p. 769).

Table 2 – Characteristics of the software to create an intelekt-maps

Name	Address	Registration	Free content	Integration
MindMeister	https://www.mindmeister.com/ru	+	+	Google-instruments
MindMup	https://www.mindmup.com/	–	+	–
XMind	Desktop (Linux, iOS, Windows)	–	+	Synchronization with Cloud
MindJetMindmanager	Desktop (iOS, Windows, Linux)	–	+	Microsoft Outlook
iMindMap	Desktop (MaciOS, Windows)	–	+	–

Source: Devised by the authors

Work with cloud tag technologies allows to create a clear understanding of theoretical concepts, visualize glossary to define priorities in the meaning of educational material. WordArt, WordItOut, Wordcloud.pro, Word Cloud Generator, TagCrrrowd, Wordle most commonly are usually used to create cloud tags.

Table 3 – Characteristics of the software to create a cloud tag

Name	Registration	Download as an image	Links	Change the font, layers, or background
WordItOut	–	+	–	+
Tagxedo	–	+	+	+
Tagul	+	+	+	+
WordsCloud	–	+	+	+
Word.pro	+	+	–	+
WordWanderer	–	–	–	+
Wordle	No online version available	+	+	+
Upbyte.net	+	+	+	+
Wordart	+	+	+	+

Source: Devised by the authors

Creation of a tag cloud can accompany the topic, poll, repetition of previous material. It is necessary to use certain forms of images, multicolored markers, to vary the direction of placement of words. As an example of the task for the final survey of students on the theme “Literature of existentialism” (Fig. 4).

Task: to get acquainted the word cloud by combining words, identify the basic prerequisites and semantic dominant in the literature of existentialism, suggest why the “Man” form was chosen to design the tag cloud, and propose your own version of the word cloud design.

Figure 4 – An example of working with a cloud tag



Source: Devised by the authors

The further integration of ICT into philological education through the development and introduction of special courses aimed at increasing students' IT literacy is promising; modification of the methodology of teaching basic courses considering the trends of development of digital society.

Integrative special course “Use of ICT in the study of philological disciplines” focused on 4th year students, the amount of study load - 1 ECTS credit, the place of experimental implementation - the Faculty of Ukrainian Philology of Kryvyi Rih State Pedagogical University.

The special course is organized in laboratory-practical classroom and individual-extracurricular mode and may contain the following topics:

The Integrative Special Course “Use of ICT in the study of philological disciplines” may include the following topics:

1. Forms of presenting information in modern information systems for processing (tables; graphic data; audio / video files; container files; presentations; static and dynamic media resources).
2. Build complex search queries on WEB search engines.

3. Software for processing and converting information of various types and formats (translators, graphic and audio / video converters, optical information recognition systems, printing systems, collages, virtual laboratories, interactive models).

4. E-learning tools: types, principles of creation, basics of creation, directions of use.

5. Individual means of communication on the Internet (audio / video, instant messaging, e-mail). Collective means of communication (social networks and network services).

6. Intercultural communication. Special software products for the study of mono-, bi- and polymorphic space.

The period of preparation for pedagogical practice in secondary education institutions is a methodically expedient period of introduction of this special course. Formation of IT competence can also be done by introducing special requirements for the completion of coursework, qualification work, didactic projects, educational presentations.

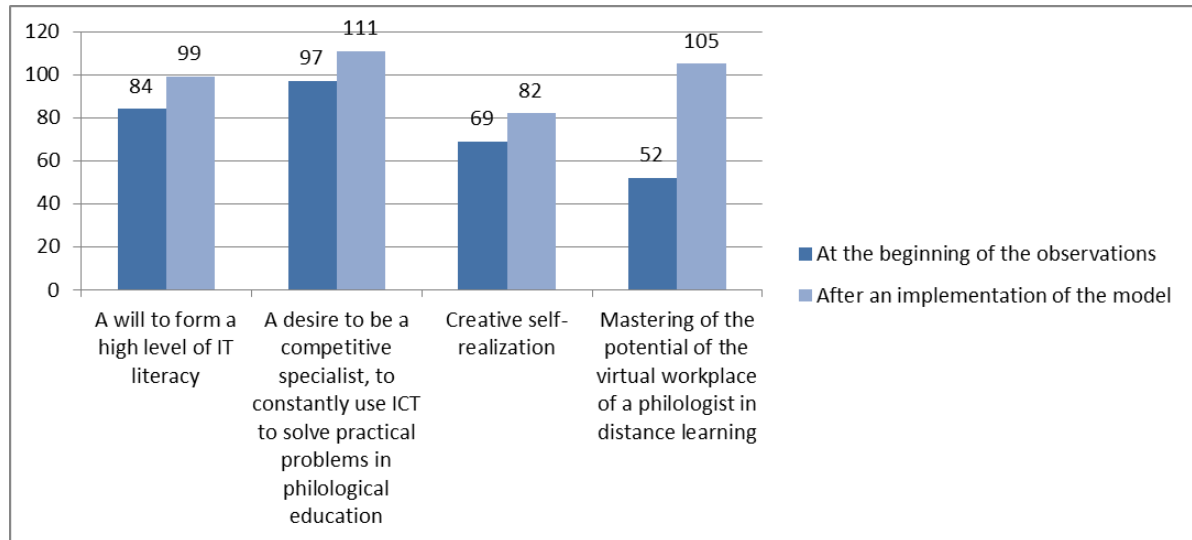
Analysis of the research results

Designing the learning process using multimodal strategies has demonstrated the significant educational potential of the proposed model. We conducted a survey and questionnaire of students who participated in the testing of this didactic construct. During the survey, students of philology noted that the implementation of a multimodal strategy for the use of ICT in the humanities provides the process with several significant advantages. Most respondents (96.5%) indicated that the implementation of this model forms creative, communicative competence, digital literacy as the ability to navigate in the digital environment. About 88% of students noted that the use of ICT in a multimodal educational environment makes it possible to cover large amounts of information in a limited period of time. All respondents indicated that the creation and use of interactive posters, mental maps, tag clouds, etc. illustrates the conceptual apparatus of courses, modernizes the system of philological education, and the introduction of new types of work increases the effectiveness of dialogue between teachers and students, increases the intensity of collaboration in group work. A significant number of respondents (80.2%) noted that working with multimodal texts implements the principles of interdisciplinary, stimulates the educational activities of research in a dynamic educational environment. All this, in their opinion, strengthens the emotional component, intensifies the development of emotional intelligence, revitalizes the learning process. In addition, all respondents noted that the personal component is formed in a personal

environment, at a comfortable pace for the student, using an individually-dominant information channel.

The results of the survey showed changes in the motivational and value attitude to the use of ICT in philological education (Fig 5).

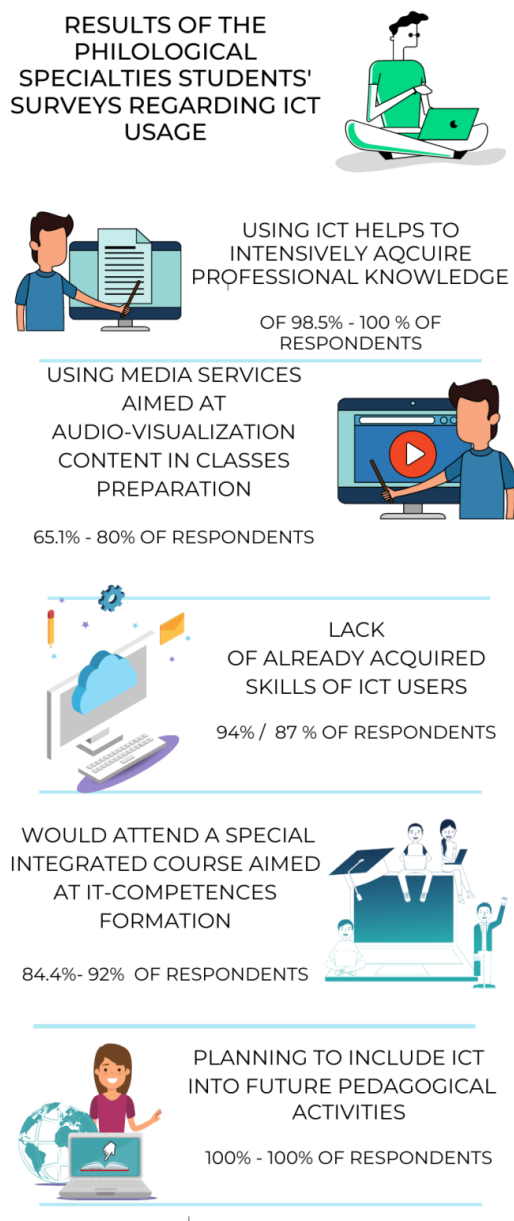
Figure 5 – Changes in the motivational and value attitude of students of philology to the ICT usage in education



Source: Devised by the authors

The effectiveness of the suggested model of using ICT as a comprehensive means of implementing multimodality in the teaching of humanities is confirmed by a comparative analysis of the results of a survey of students at the initial and final stages of work (Fig 6).

Figure 6 – Results of the philological specialties students' surveys regarding ICT usage



Source: Devised by the authors

In order to implement specific educational tasks, the considered software can be used comprehensively, both free software and commercial, desktop and cloud, for different operating systems. There is no single software that would create the possibility of practical implementation of multimodal learning.

Conclusions and Prospects for Further Research

One of the conceptual features of modern higher education is the use of multimodal teaching strategies aimed at translating philological knowledge (in literature classes and linguistic analysis of artistic text) by means of ICT. The expediency of applying these strategies is conditioned by the need to consider the cognitive characteristics of the modern young generation, as well as the need for a capacious presentation of educational material in the form most convenient for its perception, understanding, assimilation, memorization. Multimodal translation of philological knowledge by means of ICT contributes to the optimal combination of text component and artistic graphics, which affects various signaling systems; helps to implement the leading didactic principles and creates the preconditions for improving the quality and effectiveness of educational activities; motivates students to read activity, increases the aesthetic threshold of perception of a work of art / language system.

The introduction of the model of using ICT as a comprehensive means of implementing multimodality in the teaching of humanities creates the following advantages:

- provides an opportunity to absorb information as intensively and integrated as possible;
- intensifies the interaction of participants in the learning process, helps to improve the quality of communicative cooperation;
- involves various semiotic systems in the perception of educational material, transmitting information taking into account modern world trends;
- implements an interdisciplinary approach, promotes the creation of an activity media environment;
- intensifies the development of emotional intelligence, has a deep sensory impact, based on the close relationship of verbal and visual components;
- forms a space favorable for personal growth, attracting to the work of individual-dominant components of sign communication.

The considered software for the implementation of specific educational tasks can be used comprehensively (free software, commercial, desktop and cloud). After analyzing all the tools presented, we found that the only software that would allow the implementation of multimodal translation of philological knowledge – is missing. To create a computer animation, we recommend using Blender, a program that has a complex interface, meaningful functionality, is free and open. The most convenient service for the development of interactive posters is Thing Link, as a platform containing interactive content, allows you to create full-

fledged didactic units, model projects in the course of creative collaboration. Modeling of intelligence maps on the MindMeister service allows to visualize and structure various educational matrices. The advantage of this tool is the availability of free content and the ability to integrate with Google tools. Wordart programs have a wide range of shapes for the image of a set of words, the ability to choose the font, color, save files in png or jpeg formats. To create crossens, we recommend the service mycollages.ru, which is both free and paid content. Provides the ability to download in various formats, edit on the phone. Since our work is designed to interact with students, the greatest attention when choosing software, we paid to free, availability, availability of mobile versions, the ability to synchronize with the account in social networks and clouds.

Prospects for further research on the specifics of multimodal translation of philological knowledge by ICT are seen in the development and introduction of integrative special courses, the purpose of which is the formation of IT competence of students; updated methods of teaching basic courses considering current trends in the information society.

REFERENCES

- BARANOVSKA, O. B. Philological pedagogical technologies: transformation in changing conditions. *In: Actual problems of science and practice: Abstracts of XIV international scientific and practical conference.* Stockholm: Bookwire by Bowker, 2020. v. 14, p. 237-240. Available: https://lib.iitta.gov.ua/720345/1/BOV_2020%2004%2027-28%20Sweden.pdf. Access em: 10 Jan. 2021.
- BLAKE, R. Technology and the four skills. **Language Learning & Technology**, n. 20, p. 129-142, 2016.
- BOEHM, G.; MITCHELL, W. J. T. Pictorial versus Iconic Turn: Two Letters Culture. **Theory and Critique**, n. 50, p. 103–121, 2009.
- BUZAN, T.; BUZAN, B. **Supermyshlenie**. Minsk: Popurri, 2003.
- DOMÍNGUEZ ROMERO, E.; BOBKINA, J.; STEFANOVA, S. **Teaching literature and language through multimodal texts**. Hershey: IGI Global, 2018.
- DOOLY, M. «I do which the question»: Students' innovative use of technology resources in the language classroom. **Language Learning & Technology**, n. 22, p. 184-217, 2018.
- FORD, S.; MINSHALL, T. Invited review article: Where and how 3D printing is used in teaching and education. **Additive Manufacturing**, n. 25, p. 131-150, 2019.

IKONNIKOVA, M.; KOMOCHKOVA, O. Modern online platforms and digital technologies in teaching linguistics in the US higher education practice. **Information Technologies and Learning Tools**, n. 73, p. 125-134, 2019.

KLOCHEK, H. D.; BARANIUK, O. F. Word and slide in a lecture: the problem of synergetic effect. **Information Technologies and Learning Tools**, n. 72, p. 26-40, 2019.

KOLOMIETS, N.; YAREMENKO, N. Cross-cultural approach in modern philological education. *In: Actual problems of development of education and science in the conditions of globalization*: Ukrainian scientific conference. Dnipro: Roial Prynt, 2016. v. 1, p. 169-171.

KUCHERUK, O. A. *et al.* Using ICT tools for forming professional competences of future teachers of the Ukrainian language and literature. **Information Technologies and Learning Tools**, n. 71, p. 196-214, 2019.

LAASER, W.; TOLOZA, E. A. The changing role of the educational video in higher distance education. **The International Review of Research in Open and Distributed Learning**, n. 18, p. 264-76, 2017.

MAIA, B. The Professional Translator in the 21st Century: Education and Competences. **Annals of the University of Craiova**, n. 1, p. 59-76, 2016.

MAYER, R. E. Cognitive theory of multimedia learning cambridge handbook of multimedia learning. New York: Cambridge University Press, 2010.

MISHENINA, T. M.; GUSHKO, O. A. **Międzynarodowej Konferencji Naukowo-Praktycznej, Globalne aspekty Ekonomii Światowej i Stosunków Międzynarodowych w warunkach niestabilności gospodarczej** [Professional knowledge integration as a condition of future higher pedagogical education establishment philologists' cognitive activity activation in the process of study of humanitarian disciplines]. Częstochowa: Akademia Polonijna, 2016.

OLIVIA, N.; SHAKLEIN, V. Preparation specifics of students-philologists: modern technologies of literary and linguistic text analysis. **International Journal of Language Education**, n. 3, p. 91-98, 2019.

OLKHOVSKA, A. Distance learning of future translators and interpreters: tools and experience of introduction. The Journal of V.N. Karazin Kharkiv National University. Series: Foreign Philology. **Methods of Foreign Language Teaching**, n. 91, 2020.

OSADCHA, K.; OSADCHYI, V.; KRUGLYK, V. The role of information and communication technologies in epidemics: an attempt at analysis. **Ukrainian Journal of Educational Studies and Information Technology**, n. 8, p. 62-82, 2020.

OSKOZ, A.; ELOLA, I. Digital stories: Bringing multimodal texts to the Spanish writing classroom. **ReCALL**, n. 28, p. 326-342, 2016.

PRIETO-VELASCO, J. A.; FUENTES-LUQUE, A. A collaborative multimodal working environment for the development of instrumental and professional competences of student

translators: an innovative teaching experience. **The Interpreter and Translator Trainer**, n. 10, p. 76-91, 2016.

RICE, P.; BEESON, P.; BLACKMORE-WRIGHT, J. Evaluating the Impact of a Quiz Question within an Educational Video. **TechTrends**, v. 63, p. 522-532, 2019.

SOROKINA, N.; SMOVZHENKO, L. Creation of professionally directed educational foreign informatively-communicative environment for future teachers-philologists. **Information Technologies and Learning Tools**, n. 66, p. 65-77, 2018.

UNESCO. **UNESCO ICT Competency Framework for Teachers**. 2019. Available: <https://iite.unesco.org/wp-content/uploads/2019/05/ICT-CFT-Version-3-Russian-1.pdf>. Access em: 10 Jan. 2021.

VORONKIN, O. Educational Video in the University: Instruments, Technologies, Opportunities and Restrictions. *In: INTERNATIONAL CONFERENCE ON ICT IN EDUCATION, RESEARCH, AND INDUSTRIAL APPLICATIONS*, 15., 2019, Kherson. **Proceedings [...]**. Kherson, Ukraine, 2019. Available: <http://ceur-ws.org/Vol-2387/20190302.pdf>. Access em: 10 Jan. 2021.

YAREMENKO, N. V.; KOLOMIETS, N. Y. Pedagogical empowerment as a model of harmonization of psycho-cultural complexes “puer” architecture creation of the Prize of strategy for sustainable development. **Public management**, n. 18, p. 488-96, 2019.

YASHYNA, K.; KRUPNYK, O.; KARPENKO, O. Application of 3D Printing and 3D Scanning Technologies in Educational Activities. *In: INTERNATIONAL CONFERENCE ON ICT IN EDUCATION, RESEARCH, AND INDUSTRIAL APPLICATIONS*, 12., 2016, Kyiv. **Proceedings [...]**. Kyiv, Ukraine, 2016. Available: http://ceur-ws.org/Vol-1614/paper_17.pdf. Access em: 10 Jan. 2021.

ZOZULIA, I. YE.; POZDRAN, YU. V.; SLOBODIANIUK, A. A. The role of distance learning of Ukrainian language as a foreign. *Scientific Notes of the Taurida V. I. Vernadsky National University. Philology. Social Communications*, n. 70, p. 33-38, 2020.

How to reference this article

YAREMENKO, N.; KOLOMIETS, N.; KHARADZJAN, N.; MISHENINA, T.; KOHUT, I. V. Multimodality of the transmission of philological knowledge during classroom activities using ICT. **Revista on line de Política e Gestão Educacional**, Araraquara, v. 25, n. esp. 5, p. 3007-3030, Dec. 2021. e-ISSN:1519-9029. DOI: <https://doi.org/10.22633/rpge.v25iesp.5.15993>

Submitted: 13/03/2021

Required revisions: 23/07/2021

Approved: 19/11/2021

Published: 30/12/2021

Processing and editing by Editora Ibero-Americana de Educação - EIAE.

Correction, formating, standardization and translation.