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Yulia Mosina

Lecture at the Foreign Languages Department
academician V. Lazarian Dnipro National University
of Railway Transport,
Dnipro, Ukraine
ORCID: 0000-0001-9512-4740
e-mail: yuliamosina@gmail.com

THE ROLE OF VISUALIZATION IN EDUCATION PROCESS

Abstract. The article is devoted to disclosing contents of visualization of educational information as a relatively new trend in the modern educational process. Examples of ways to visualize learning material and reasons why these methods should be used in the learning process are given. Particular attention is paid to such visualization tools as multimedia presentation, mind maps, infographics, scribing. The perspectives and role of visualization in the modern educational space are discussed.

The main purpose of visualization is to support logical operations at all stages of the learning activity. Imagination, attention concentrating, associative thinking, and increasing of cognition interest are also among the functions of visualization. The variety of visualization tools creates the possibility of their rational use in education, including enhancing learning activities. Visual schemes for presenting the analyzed information have a variety of styles and form a combination of conceptual and graphic elements. Active use of visualization tools in foreign language study helps to influence several channels of information perception by the student simultaneously, providing increased attention and efficiency of acquisition and memorizing new material, since the massive amount of information is presented in a concise manner.

Keywords: visualization, multimedia presentation, mind maps, infographics, scribing, educational process.

Problem statement. Currently, the intellectualization of the information space and the environment, and the implementation of interconnected digital information devices into it are creating a new type of civilization, which is characterized, first of all, by visualization, updating and strengthening of information, expansion of social memory, as well as the synthesis of knowledge, education and high technology.

At the same time, a new type of culture is being formed in the modern information space, where visualization is the most important principle of communication and information representation. The combination of different ways of presenting educational information develops cognitive styles not only of transmitting this information, but also of its perception.

Research publications. The problem of visualization in education has been interested in during several decades. Bezuglyi D. suggests that in the age of the information society, up to 90% of information is transmitted through visual channels, as there have been significant changes in the means that realize visual expression of information and which have influenced the organization of the educational process and its initial results. But the visualization possibilities in the educational sphere are not fully realized yet. Due to the visualization capabilities, large amounts of information can be presented in a concise, convenient and logical form, which in turn contributes to the

intensification of learning (Bezuglyi D., 2014). Shatri K., Buza, K. note that with the help of visual images humanity has been communicating for centuries but today's students accept visual information much better than one presented in any other way (Shatri, K., Buza, K., 2017). Katkhanova Yu., Korzinova E., Ignatyev S. assume that the brainwork of a modern person may differ in a whole complex of characteristics that arose due to the growing visualization of the information space. It corresponds to the nature of man, his intellectual skills, among which the share of perception and processing of visual information plays a crucial role. Hence, it can be considered that the visualization of educational information by various means, including using computer systems is one of the priority areas in the field of educational methods. (Katkhanova Yu., Korzinova E., Ignatyev S., 2018)

The aim of the article is to find effective methods of visualization to make educational process more productive and to achieve higher results.

Presenting the main research material. The term «*visualization*» comes from the Latin «*visualis*» – perceived visually. Visualization is the process of presenting data in the form of an image with the aim of maximizing the facility of understanding; giving a visible form to any conceivable object, subject, process, etc. In fact, such comprehension of visualization involves minimal mental and cognitive activity of students.

The main purpose of visualization in training is to support logical operations at all stages of the learning activity, and to perform analytical actions (analysis, synthesis, comparison, search for links, systematization, conclusion, etc.) above all. Among the functions of visualization there is also the development of imagination, attention concentrating, associative thinking, increasing of cognition interest etc. Cognitive visualization of didactic objects is currently promising in education. This concept refers to almost all existing types of visualization of pedagogical objects. But there are disadvantages of using this method as well. When visualizing the training material, it should be taken into account that visual images reduce verbal expression, thereby sealing information (Bezuglyi D., 2014, p. 9).

The variety of visualization tools creates the possibility of their rational use in education, including enhancing learning activities. Most didactic visual tools (reference summaries, structural-logical diagrams, reference signals, logical-semantic models, etc.) differ in the volume of knowledge presented and the difficulty of working with them, the possibilities of explanation key concepts of the educational topic and their details, the possibilities of optimal support for operations of mental and educational activity – that is, in terms of the semantic (content) and especially logical (functional) component of the demonstration of knowledge and actions.

Visual schemes for presenting the analyzed information have a variety of styles and form a combination of conceptual and graphic elements. A diversity of properties and mechanisms of action, differentiation of the forms and functions of visual means allow them to be included in learning activities, taking into account pedagogical expediency, tasks, conditions and situations.

Today there are many visual tools used in various disciplines, some of them, which have a high indicator of effectiveness in the practice of teaching foreign languages, are presented here.

A **multimedia presentation** is the presentation of information using a wide range of multimedia technologies, such as text, graphics, animation, audio and video clips, drawing and photography. The main advantage of the presentation as a means of visualization is that a dynamic visual series are facilitative of the fast and durable fastening in the memory of a student who learns language material.

The use of multimedia presentations ensures the implementation of a communicative approach to knowing a foreign language when a student absorbs skills in all aspects of speech activity: reading, speaking, listening and writing. High efficiency in acquisition of linguistic knowledge is

due to a whole range of unlimited possibilities for representing linguistic material (lexical, phonetic, grammatical and cultural) in the form of static and animated pictures, video and audio files, and text files.

The active use of presentations in teaching foreign languages helps to impact simultaneously on several types of memory, ensuring increased attention of students and the effectiveness of perception and memorization of new material.

Mind maps were developed by American psychologist, specialist in the development of memory and thought Tony Buzan in the 60-70s of the 20th century, and since then he has been considered a promoter of the idea of mind maps as an effective way to work with information. The basic idea of mind maps is to use radial notation rather than traditional linear text. The main topic is focused in the very centre of the sheet, and then minor ideas move away from this basic idea in the process of generating associations.

The more new information you learn in an integrated, organized way, the easier it is for you to acquire this amount of new information. Mind maps are one of the most effective modern means of visualizing educational material used in teaching foreign languages due to the systematization and structuring of a large amount of information.

When applying such a mind map, a wide range of possibilities is realized: introduction and explanation of new grammatical material, semantization and activation of vocabulary, formation of linguistic and cultural competence, the arranging of the search for solutions to problems of a given problem situation, the preparation of projects, the planning of a monologue.

Mind maps have a huge advantage over the usual linear way of presenting educational language material, not only by focusing on the key points of the studied object, but also due to a variety of drawings, arrows (to indicate associative connection) and colour solutions, which fully reflects the visibility presence.

Thus, the key ideas of the technology of mapping in teaching foreign languages, which is based on the principle of visualization of knowledge, helps to optimize the mental activity of students in achieving maximum positive results and minimal time and effort.

One of the effective ways to visualize educational material in the educational process is **infographics**. Infographics is a way of conveying an idea based on the illustrative supporting of any information presented in the form of concepts or data, often quantitative. Infographics is a variety of graphs, the specificity of which lies in the special organization of the material, in particular in the combination of a graphic image and text.

The effectiveness of infographics directly depends on how the data is presented, how they are arranged and what visual design is chosen for them. Moreover, this method of compiling information is convenient in training because there are no essential use restrictions since infographics can be static, animated, or even interactive, depending on the goals of the training, its audience, and a specific subject. Infographics in training allows you to take a fresh look at the pedagogical process itself, as what is written in the textbook with a lot of words can be expressed with one capacious and colourful slide. (Kondratiuk S, 2018, p .16)

These days interactive infographics is gaining popularity in training, allowing a student not only to observe, but also to interact with the data that is seen on the screen. The use of interactive technologies in the educational process allows a student to manage learning process himself. This approach is one of the most advanced in modern pedagogical design.

One of the main advantages of infographics is its versatility: one can present any information in the form of a colourful graph or interactive table. A great virtue of such visibility style of data presentation is achieved because a human being thinks in images and therefore memorizes information presented in a simple and accessible form as well as designed attractively better. That

is why using various kinds of infographics in training simplifies learning of the training course greatly, makes its comprehension more simple, visual and effective.

Training courses created using infographics meet several important requirements at once, such as they allow the student to learn the maximum amount of information in a short time, without resorting to rote learning, to show independence during the course, and train memory and visual perception.

Infographics is widely used in foreign language lessons in the introduction, revision and generalization of lexical and grammatical material. The visualization of data makes using technology guarantees for the development of cognitive and communicative skills of students and increases their motivation, thereby providing a positive effect in the educational process.

Another visual method of presenting new information and revising learned one is **scribing**. Scribing is the latest technique of presentation in which the speaker's words are illustrated with drawings on a white board (or piece of paper) simultaneously. It was invented by a British artist Andrew Park for the British Association for the Advancement of Science.

During scribing we both hear and see approximately the same thing, while the graphic is fixed on the key moments by the audio. Today scribing is an innovative technology with which you can attract the attention of listeners, provide them with additional information and highlight the main points of the report.

Scribing is representation of drawings, turning ideas into visual images. Scribing as a separate profession has been spoken about relatively recently. In the West, visual thinking as an industry has been developed since the 70s. One of the first who found using scribing as a productive and interactive tool for conceptualizing the information used by students and teachers at school was an American professor Paul Bogush. He refuted an educational motto "Read a paragraph from a textbook and answer the questions", proving the effectiveness of using a scribe presentation in the educational process.

There are two main types of scribing: facilitation and video scribing. Scribing-facilitation (from English *<facilitate>*) is the conversion of information from a verbal form into a visual one and which is being fixed in real time. An example of scribing-facilitation is a teacher's work in the classroom while explaining new material with the help of chalk and a blackboard. The advantage of video scribing is that the video can be used many times; this type of activity is of particular interest to the audience.

The most common types of video scribing are hand-drawn scribing, application scribing and online scribing.

Hand-drawn scribing is traditional scribing. An artist (a scriber) depicts pictures, pictograms, schemes, diagrams, writes down keywords. This is proceeding simultaneously with the audio records behind the scenes. In application scribing ready-made images that correspond to the sound text are superimposed or pasted onto an arbitrary background in the frame.

Magnetic scribing is a type of application one, the only difference is that the ready-made images are attached to the presentation magnetic board with magnets.

Online scribing needs specific software. When creating this type of scribing, special-purpose programs and online services are used. With their help, video can be created using ready-made templates.

Conclusions and further research prospects. Visualization itself has been known and used since ancient times, but it has changed profoundly with the developing of multimedia technologies. There is a great variety of visual tools (multimedia presentation, mind maps, infographics, scribing, etc.) which may be used by teachers during classes that help students to acquire new information more easily. It should be taken into account and used in the educational process that due to the fact

that visual information is processed by the right hemisphere and, interacting with the verbal one, develops interhemispheric connections, modern students do not accept formal approaches to learning. If the use of visualization is methodological, it will help create motivation for students to take active part in the learning process and to promote acquisition of a subject as well as to improve the quality of knowledge.

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РОЛЬ ВІЗУАЛІЗАЦІЇ В ОСВІТНЬОМУ ПРОЦЕСІ

Мосіна Юлія

викладач кафедри іноземних мов

Дніпровський національний університет залізничного транспорту

ім. академіка В. Лазаряна

Дніпро, Україна

ORCID: 0000-0001-9512-4740

e-mail: yuliamosina@gmail.com

Анотація. Стаття присвячена аналізу методів візуалізації навчальної інформації як відносно нової тенденції в сучасному освітньому процесі. Наведено приклади способів візуалізації учбового матеріалу і причини, чому ці способи слід застосовувати у процесі навчання студентів. Особлива увага приділяється таким методам візуалізації, як мультимедійна презентація, ментальні (інтелектуальні) карти, інфографіка, скрайбінг. Обговорюються перспективи і роль візуалізації в сучасному освітньому просторі.

Завдяки інтелектуалізації інформаційного простору та впровадженню нових технологій з'являється суспільство нового типу, яке характеризується іншими способами сприйняття інформації, ніж традиційно застосовувались при навчанні. Опора на образ забезпечує ефективність вивчення, відтворення і подальший розвиток власного досвіду, мислення, діяльності, отже стимулом для розумових процесів є об'єкти, що сприймаються візуально, тобто візуальні навчальні матеріали. Основна мета візуалізації – це підтримка логічних операцій на всіх етапах навчальної діяльності. Серед функцій візуалізації вирізняємо розвиток і концентрацію уваги, асоціативне мислення, підвищення інтересу до пізнання тощо. Візуальні схеми подання інформації мають різноманітні стилі та утворюють поєднання концептуальних та графічних елементів. Різноманітність властивостей та механізмів дії, диференціація форм та функцій наочних засобів дозволяють включати їх у навчальну діяльність з урахуванням педагогічної доцільності, завдань, умов та ситуацій. Активне використання засобів візуалізації у викладанні іноземних мов допомагає одночасно впливати на кілька каналів сприйняття інформації студентом, забезпечуючи посилення уваги та ефективність засвоєння та запам'ятовування нового матеріалу, адже інформація подається у стислому за формою та великому за обсягом форматі.

Ключові слова: візуалізація, мультимедійна презентація, ментальні (інтелектуальні) карти, інфографіка, скрайбінг, освітній процес.

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