Infographics as an Effective Means of Information Visualization in the Learning Process

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ANNOTATION

The article presents the basic concepts, definitions and applications of infographics as one of the methods for visualizing educational material in the educational process. The types of infographics are considered, examples of its application in the classroom are given, an analysis of the tools for creating high-quality infographics in the process of preparing for training sessions is presented.

KEYWORDS: *visualization, infographics, types of infographics, main directions and didactic principles of using infographics, effectiveness of infographics in the educational process.*

Modern society needs active creative individuals who are able to respond to changes in technology, make decisions and be responsible for their implementation. In an era of rapid growth in the volume of information, the problems of its assimilation and understanding, there is a need to update the education system. The conceptual provisions of various approaches in education involve ensuring the choice and self-determination of each student in the learning process.

The level of assimilation of scientific knowledge depends on the availability, perception, and understanding of the explanation of the material by the teacher. The practice of working in the education system shows that the level of motivation and intellectual development of students has dropped sharply.

Significant difficulties are caused by the study of subjects of the natural science cycle. This is due to the fact that the development of these areas of knowledge requires considerable effort, patience, and cognitive abilities.

At the same time, most students do not imagine how the studied material can be used in practical activities.

The solution to this problem is facilitated by information and communication technologies, which form a new way of perceiving information, where visual images are given the main place.

Organize the learning process based on a visual approach to the formation of knowledge, skills and abilities, which will maximize the use of the potential of visual thinking.

One of the main directions of this approach is infographics. Usually, the term infographic refers to the visual representation of information, data, and knowledge.

These are graphs that use the complex information needed to quickly present large amounts of data. Infographics is actively used in completely different areas, from science and statistics to journalism and education. In general, this is a fairly universal means for disseminating conceptual information.

Infographics are a graphical way of conveying information, data and knowledge, solves a whole range of pedagogical tasks, among which one can single out the activation of cognitive activity, the development of visual thinking and the increase in visual literacy, and in general visual culture.

The implementation of the visual approach in the learning process will allow us to construct a visual learning environment, that is, a set of learning conditions in which the emphasis is on using the reserves of students' visual thinking.

These conditions presuppose the presence of both traditional visual aids and special aids and techniques that make it possible to activate the work of vision.

It is important to take into account the ongoing changes when organizing the educational process, where learning is mainly associated with textual sources of educational content.

In this regard, it is necessary to find a balance between traditional text culture and the use of new text formats in the educational process, as well as attention to the needs and expectations of a student who lives in a digital reality.

Infographics combines the logic of construction, the brightness of images, and the volume of information and is considered as a new means of visualizing educational knowledge.

In the modern world, there is a trend of visualism, to its ways of processing and presenting information. The famous American futurist John Naisbitt, in his new book devoted to the analysis of the current situation and forecasts for the nearest development, states: "Visual culture is taking over the world!" [2].

After all, everyone knows that the human brain is designed in such a way that most of the external information it processes is visual in nature.

G.A. Nikulova, S.V. Selemenova, T.V. Solovieva and others [5]. In their works there is no unity in the unambiguous interpretation of the definition of infographics, the common thing is that they characterize infographics as a visual representation of digital, graphic, verbal information.

Infographics is a synthetic form of organizing information material, including:

➢ visual elements;

➢ Texts that explain these visual elements.

The main difference between infographics and other types of information visualization is its metaphoricity, that is, it is not just a graph, a diagram based on a large amount of data, it is a graph in which visual information, analogies from life, and subjects of discussion are inserted.

There are three types of infographics:

➢ Static – most often a single slide without animated elements. The simplest and most common type of infographics;

➢ Interactive – contains animated elements, users can (to one degree or another) interact with dynamic data. This type of infographic allows you to visualize more information in one interface;

➢ video graphics – is a short video sequence that combines visual images of data, illustrations and dynamic text

Infographics in the educational process:

➢ forms the necessary skills to work with educational material, develops the ability to establish cause-and-effect relationships and patterns, draw conclusions and make decisions based on independently obtained information;

➢ can be used in laboratory, lecture and practical classes, to organize effective search activities and create problematic situations;

➢ facilitates the understanding of complex material, relationships that need to be established and shown;

➢ Teaches to formulate conclusions based on the analysis of the information provided.

➢ Can become an effective means of improving the quality of education, accessibility of information search and work with it, the ability to create projects and individual routes.

The organization, convenience, technology and other advantages of infographics have already been appreciated by teachers, since infographics allow you to present a large amount of information in an organized form that will be convenient for the student viewing it. The effectiveness of these tools is unequivocally connected with literacy, systematicity and the reasonableness of their use.

Quite effective is the simple use of templates and repetitions when organizing the presentation of information. This allows the teacher to develop useful cognitive habits of working with educational resources, teach them to "learn". The objects of information graphics increase the information saturation and visibility of educational materials, and the meta-design embodies the idea of the functioning of the visual-cognitive scenario of students' work with text blocks of electronic manuals.

The use of infographics in the classroom at the university allows you to clearly show the relationship of the subject and object, objects and facts, as well as time and space; serves to facilitate the perception of complex multi-level processes, explaining the relationship between elements, resolving controversial issues, outlining stages and algorithms for solving problems; promotes motivation to study a large amount of information by students, i.e. is the solution to the problem of studying a large amount of complex information.

Infographics allow students to work with information and master it through his dominant type of intelligence.

Infographic tools enable all students to consolidate their knowledge of the subjects studied in an integrated way, to show their talents and creative potential; turn the learning process into an active, motivated, strong-willed, emotionally colored, cognitive activity [1].

The system of infographic tasks is effective for the development of visual thinking of students, since visual thinking "uses" the language of visual means to make educational resources more visual.

The analysis of the data obtained made it possible to fix the dynamics of the development of visual thinking of the subjects of training. As a result of the formative experiment, significant quantitative and qualitative changes were revealed in all components of visual thinking.

So, the effectiveness of infographics for the development of visual thinking has been revealed.

Infographics organized in information technology classes are aimed at improving the working methods of the educational process. Therefore, we can talk about the innovative nature of infographics, which are carried out in order to increase the effectiveness of training.

It is useful that students not only use ready-made infographics, but also create their own: draw relationships, algorithms and schemes, come up with symbols for ideas. In the process of creating infographics, students must independently obtain the necessary information and also process them independently. Not only to systematize the facts, but also to visualize the result of their systematization, creating motivation to study a new topic.

Infographics can be used as a means of analyzing new material by students (in this case, an infographic poster is created by a teacher), or as a means of consolidating and assimilating the

material (in this case, infographics are created by students). Also, within the same topic, you can combine both highlighted ways of using infographics.

Thus, based on the conducted research, it can be concluded that infographics is an effective pedagogical condition for the development of visual thinking. Our research has proved to be effective in relation to most components of visual thinking, which implies further development and improvement of cognitive-visual technologies in general and infographics in particular.

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