The use of visualization techniques in education

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Visualization has played a very important role in the educational process for quite a long time and has proven to be very effective. Our brains are much better equipped to understand by seeing than by reading. Visualization seems to have become a key learning component. The use of visualization techniques in learning is not new. They have been used in maps and drawings for thousands of years. Visualization technology echoes the pedagogical concept of visual literacy that arose in the USA in the late 60s of the 20th century. This concept is based on the importance of visual perception for a person in the process of cognizing the world, the leading role of the image in the processes of perception and understanding.

Presmeg describes visualization as an aid to understanding, and one can therefore speak about visualizing a concept or a problem. To visualize a problem means to understand the problem in terms of a visual image (a mental image). Hence the visualization process is one that involves visual imagery, with or without a diagram, as an essential part of the method of solution [3]. The visualization motivates students to learn, making them more cooperative and developing their skills for critical approach.

The term ‘technology for the visualization of educational information’ was proposed by G. Lavrentiev and N. Lavrentieva. Expanding the boundaries of this technology, they mean by visualization not only symbolic, but also some other images of ‘visualization’ that come to the fore depending on the specifics of the object being studied. These can be the following basic elements of the visual image: point, line, shape, tone, color, size, scale [2].

The more images are shown to learners, the more they remember. Today, the field of visualization has become quite a bit more diverse. The technology of visualization is provided with methodological techniques. High quality learning materials such as texts, graphical illustrations, interactive demonstrations, tutorials,

and audio and video presentations, mind maps, cluster techniques are essential for students to fully grasp and understand the meaning of a certain topic.

Scribing - the latest presentation technique (from the English ‘scribe’ - to sketch sketches or drawings). The speaker’s speech is illustrated on the fly with felt-tip pen drawings on a white board (or piece of paper); it turns out, as it were, the ‘parallel effect’, when we both hear and see about the same thing, while the graphic series is fixed on the key moments of the audio series. The success and effectiveness of scribing is explained by the fact that the human brain, inclined to draw pictures, thinks in images, and the language of the picture is a universal language. Nowadays teachers also turn to various internet services with their techniques. A word cloud is one of the ways to visualize textual information that can be successfully used in educational work. Word clouds also provide an easy way for teachers who are just getting started using web technology in the classroom. There are a lot of services for creating a word cloud. In education, these services can be used to summarize the results of surveys, games, events. You can process the text and determine the frequency of a word. The ‘word cloud’ method allows consolidating, update and correct knowledge in the field of vocabulary, and also helps to individualize the work of students with different levels of knowledge in the subject. The ‘word cloud’ allows you to include in the work a visual aspect that optimizes the perception of information. Created images can be saved in the gallery, saved as a picture on the computer’s hard drive, printed on a printer. You can also add a link to the cloud on your website, blog or share it with friends.

So, ‘decoding’ of educational information in the framework of visualization technology can be technologically achieved by different methodological techniques. These techniques can be used at different stages of the lesson. It is important to remember that these techniques are not an end in themselves, but a means of achieving a result. They contribute not only to the ability to work with a large amount of information, but also to the ability to generate new visual images and their verbalization.

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