Communication organization issues through the design of visual space in a digital environment

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Abstract. The article reveals the main types of visualization to support complex activities, specifies the forms of using methods of information visualization by means of computer technologies. The main principles of teaching communicative design are described, with account for modern visualization technologies and technologies for exhibiting design-engineering products in the digital space. The article reveals various aspects of the design teaching methodology, focused on the comprehensive use of visualization tools in the learning process. Practical recommendations are given that allow you to build a training program taking into account a wide range of new digital media technologies.

1. Introduction
Modern trends in the development of society with the advent of new information technologies entailed the accelerated development of new communication links and contributed to a change in the means of communication, which led to the rapid development of a number of areas of computer technology-based design. Visual communication has become the most effective way of problem-solving. It has been proven by science that verbal and visual information is perceived and processed differently by the brain. Visual experience is thinking in images that gradually accumulate and thus increasing the conceptual base of a person.

Complex structural relationships require a lot of words and sentences to explain the details. However, they are more effectively learned by the means of visual communication. The language of visualization is universal, thus it's preferable to display different kinds of information graphically.

With the spread of digital technologies, the means of transmitting communication messages began to develop and improve more actively, and their organization changes.

The organization of visual material through the screen involves the use of various communication technologies, including the following plans:

1) an informational plan, which involves the accuracy of the visual message transfer;
2) presentation plan, which necessitates the creation and usage of images accounting for the characteristics of the target audience;
3) a communication plan, involving support for joint actions and connections of participants in virtual communication.

At the present, specialists in the creation of visual communications are mainly graphic designers whose professional training is aimed at developing creative thinking, obtaining versatile knowledge
2. Materials and methods
In order to study the content of the use of communication technologies, let us focus on the visualization of the communication support of social practice.

When discussing the presentation plan, it's necessary to take into account the expositional environment that influences the creation and formation of visual material. According to Marshall McLuhan, the parameters of this environment drastically affect the development of design, while video and interactivity provide for openness and dynamics, where the work area is larger than the window through which we look [2]. “Computer technologies are an intermediary, a medium between virtual models of presentation and exhibition environments, which can be both real and virtual” [3, p.116].

Due to the fact that exhibition environments are needed for complex activities, they include various types of resources. Let's consider the capabilities of the primary means of information visualization in various situations.

Information visualization in scientific and educational spheres, as well as business these days is highly dependent on infographics - otherwise known as information graphics, which is "data journalism" (set, catalog) of graphic signs, images, diagrams, various types of graphs, used for the purpose of organizing various information, achieving the greatest accessibility for understanding the topic in question, its better visual presentation.

Scientific research using the eye tracking method has shown that the subjects pay attention primarily not to the text, but to the image. This is where they search for the main meaning of information [1, p. 229]. Infographics usually combine text and graphic information. They complement each other organically.

Modern infographics are very diverse. Each type has its characteristics, pros and cons. Infographics are divided into two main types by to the method of presentation - static and dynamic, according to their functional purpose - illustrative, cognitive and communicative. Common types of classification are also 2D and 3D infographics, video infographics. Let's dwell on the essence of each of them.

2D infographics are flat images that have dimensions in two planes (height and width), which can be either still or animated.

3D infographics are a tool of data transferring by the means of creating 3D models in special computer programs and presenting images that are more realistic, palpably three-dimensional and at the same time animated, i.e., moving and transforming in space and time. Thus, 3D infographics are animations made in special 3D computer programs. Layered graphics make it more impactful, engaging and artistic.

Video infographics are an effective way to present static data. Information in the form of animated graphics is distinguished by a clear sequence and structure, due to which it is easier and more interesting for the audience to perceive.

Additionally, one can add sound effects, music and/or a voiceover track.

One of the most actively used means of modern communication is presentation, the purpose of which is to accompany spoken information (such as reports, lectures, messages, etc.).

Presentation infographics as data visualization are extremely popular these days. It is impossible to imagine any presentation without them. Graphic elements or objects, especially appealing from the point of view of their design solution, quickly and effectively convey the necessary information to the listener.

The visual design of the presentation, the use of all available graphic solutions in the design of its slides play an essential role for the sensory and aesthetic perception of information. The means by which the designer helps to convey information are color, fonts, textures, modular grid, etc.

The most common presentation programs today are PowerPoint, StarOffice Impress, Google Slides and Keynote. A large number of themes, applications, templates, designs of graphs, diagrams,
diagrams, etc. have been developed for them. Infographics can be easily exported from PowerPoint files into other applications to create more creative presentations, such as Google Slides, just like content in other applications is imported into PowerPoint. Presentations can be animated, for which there are several modes or animation options for slide elements, as well as for transitions from one slide to another. It's possible to expand the selection of templates. For example, in PowerPoint you may do so by contacting one of the sites dedicated for this purpose. “The current trend in infographics is not the traditional use of templates or standard icons, but the transformation and generalization of infographics. Innovative technologies make it possible to create visual storytelling with a clear understanding of the conveyed visual information” [4, p. 143].

For the visualization of complex information in presentations, you can define general requirements, the fulfillment of which can make the presentation interesting, creative and informative, not to mention easily understood. Let us highlight the main ones.

1. The presentation should not be overloaded with text, graphics or images, especially small ones.
2. Presentation slides should have a consistent design that helps convey its style.
3. The font should be compatible with the composition and the graphic form, which, as a rule, has a more significant volume and information density.
4. Slide text should be short, clear and structured. In recent years, designers have often made font the basis of a slide composition, highlighting it with color gradation, scale, color or texture.
5. The color scheme should be uniform, not overloaded with different colors. It’s best to select no more than 3 basic colors. The color combinations must follow the well-known rules of color theory. Contrasting colors enhance the artistic expression of the presentation. When it comes to the trends of the recent years, bold color combinations are especially prevalent.
6. The composition of the slides should be balanced, integral, built with account for the psychology and physiology of human visual perception.

The aesthetic appeal of presentations is one of the important parts of their design, especially for graphic design students.

It should be noted that in the modern world, animation and video are the most important means of communication in the digital environment. The use of video format is well illustrated by the organization of TEDx conferences. The model of an 18-minute presentation on a hot topic, as a rule, is accompanied by a presentation displayed on a touch screen. Graphic outline, made to visualize reports, creates the effect of visualizing the style and manner of each speaker.

The next most commonly used format at the moment is a combination of interactive elements of video and animation. Animated graphics are gaining more and more popularity in the context of remote communication. To design this kind of visualization, the drawing process is filmed, which is edited with added sound and special effects. Icons and illustrated text accompanying the story gradually appear on the screen. This approach does not require expensive video processing. At the same time, experience in graphic facilitation is required from the person creating such a presentation. The term "facilitation" originates from the English verb "facilitate" - to promote, help, simplify, direct. The purpose of such a presentation is to convey the idea, to facilitate understanding of the relationships between elements. As practice shows, such an animation stimulates the imagination and creates a higher level of involvement of the communication participants.

Ways to effectively use visualization when working online include the following components:
1. Well-crafted images, videos, and animations that highlight key points.
2. The use of graphic templates in a digital environment that allow participants to engage in a common interaction simultaneously.
3. Creation of virtual meeting rooms and enabling of virtual meeting rooms visual components during web conferences that allow to involve large groups of people in communication.

According to D. Sibbet, visualization is an extremely complex phenomenon, which includes several key areas of the world of visualization: cognitive visualization, graphic design, data visualization, visual facilitation [7].
For the optimal organization of communication in a digital environment, a special approach is required. One must take into account the ways to complete the following tasks:

- orientation of communication participants in a virtual environment;
- the use of accurate visual images, specifically chosen for the target audience;
- designing support for participants and their joint activities.

Thus, a specialist who provides interactive visualization in organizing communication is faced with a wide range of questions - what kind of exhibition environment to choose, what conditions to create for the participants, which templates and metaphors to choose, how to prioritize and structure a presentation scenario.

According to a number of researchers, the successful implementation of training for specialists in the field of graphic design is only possible under the condition of versatile professional training. Thus, S.A. Semin, considering various aspects of communication, writes that the activity of a modern designer requires professional thinking, that combines the figurative and systemic principles, brings new socio-cultural meanings into reality [6, p.16].

3. Results

Clarifying the relationship between various aspects of training in the education of students in the direction of Communicative design, we tested the system of educational creative tasks. The inclusion of students in design practice was carried out in several stages. At the very beginning of their training, the students were offered tasks geared for developing figurative thinking. By building their own "image libraries", students begin to confidently operate with images, which may include both simple and abstract concepts. In parallel with this, it became more expedient to master the simplest techniques of animating graphic elements. Adding animated text or pointers to a presentation or poster develops an understanding of the interactive composition.

As a result of such tasks, it was unconditional that a schematic representation of an object allows them to accurately formulate the main properties, make them understandable to others, reveal hidden connections, show the problem under discussion as a single integral system [8].

Animated service elements and graphics are used to create a unified composition, with the key points highlighted by a whole range of means: color, location, shape, and dynamics. Thanks to modern computer graphics programs and graphic tablets, such tasks are of great interest to students.

At the next stage, students begin a more complex task that includes analyzing information in terms of building a hierarchy. While studying articles, books or speeches, they create graphic notes. Based on the previous knowledge in the field of animation, the elements of this outline can be dynamic and influence the viewer's perception of significant moments. Over the course of this work, future designers reflect on and learn to build correlations.

Key messages and correlations are brought to light and contribute to a clear understanding of the hierarchy within information blocks.

This kind of work prepares students for a stage that allows them to work with more complex information and create infographics. At this stage, interactive visualization of various graphic elements takes on a more professional look.

Further work in the training of a specialist in the field of graphic design is aimed at addressing the more complex aspects of organizing information. These include the creation of scenarios for complex presentations, including text blocks, graphics and diagrams. At this stage, in parallel with figurative thinking, systematization skills are developed. Over the course of training, there are tasks introduced to create diagrams that demonstrate difficult situations, complex concepts and ideas.

Systematic work in this direction contributes to the development of such necessary qualities for a designer as creativity, flexibility of thinking, perception of information and the ability to combine disparate facts into a coherent picture.

The practice of using visualization tools in the learning process has shown that students develop the following skills and abilities:

1) structuring information and identifying relationships and hierarchy between elements;
2) understanding the capacity of digital technologies in the field of compositional shaping;
3) development of scripts for presentation materials;
4) the ability to select the most successful kinds of font, color and stylistic solutions to convey the meaning of information of varying complexity.

This approach to training is, in our opinion, aimed at comprehensive professional training of a modern specialist in the field of graphic and communicative design.

4. Conclusion

Therefore, the modern development trends, which has become dynamic and personalized, have led to a significant change in the transmission of information, which is clearly observable with the example of digital products of the Internet industry, digital educational environments, the organization of video broadcasts and many other forms of digital visual communication. The changes place new demands on the visual organization of content in communicative design. At the moment the most relevant is the organization of visual material through a screen. In the changing situation, it is necessary to look for new ways of creating visualization, which include nonlinearity, editing, blurred transitions, multimedia and heterogeneity.

Analysis of this type of material serves as the basis for the development of a number of courses and assignments to train designers in the design of visual space in a digital environment.

Possession of computer technology and the ability to design the visual component of information in a digital environment is the key to success and demand for a specialist in various areas of modern communication. Such an orientation in the methodology of teaching computer graphics is of certain scientific and methodological interest for the professional training of graphic designers and has great prospects in the educational process in higher education.

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