Multimedia Technologies in Modern Visual Communications and Design Education

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Abstract

The essence of the development of the sphere of professional training of specialists in multimedia design is to increase the efficiency of the work of multi-level, specialized and multifunctional educational institutions that provide professional training of design specialists, improve the qualifications of teaching staff of such educational institutions, and develop social partnership of educational institutions with business.

The purpose of the academic paper lies in determining the standpoint of specialists in the sphere of computer design and practising teachers of graphic and computer design specialities regarding the features of using multimedia technologies when working with visual communications and in design education.

Methodology. In the course of the research, the analytical and bibliographic method has been used to study the scientific literature on the application of multimedia technologies when working with visual communications and in design education, as well as a questionnaire survey for the practical clarification of certain aspects of multimedia tools in the field of visual communications and in design education.

Results. Based on the results of the research, the development process, the role and features of the use of multimedia technologies in the sphere of visual communications and in design education have been studied, and the practical aspects of the using multimedia tools in the educational process and practical activities of specialists in the field of computer design have been clarified.

Keywords: computer design, graphic design, design education, multimedia technologies, visual communications, multimedia design

1. Introduction

In the modern society, the role of education is rapidly growing and the pace of development of information and communication technologies is increasing; consequently, the issue of ensuring a high educational level and increasing the cognitive activity of future specialists becomes especially relevant. Accordingly, educational institutions are faced with the task of searching for new methods of pedagogical activity and introducing the latest teaching tools that would stimulate students to study and learn new.

The application and use of multimedia technologies allows not only improving the educational and cognitive process, but also increasing the information culture of students.

The process of development and improvement of visualization activity has been influenced by the new conditions of modern economic life. The emergence of the process of mass consumption, overproduction of goods and oversaturation of the consumer market with them goes parallel to the constant dematerialization of a thing, an object, a product, which is, among other things, an object of design. Basically, design no longer offers things, but consumer values, forasmuch as from the point of view of advertising, a material thing is not so much an object depicted as a judgment and opinion about it.

The advent of computer graphic programs has brought graphic design to a fundamentally new level, making it easy to work with form and content. The emergence of programs for transferring and exchanging information, their availability, significantly accelerates this process.

From the viewpoint of our research, the quality of professional training of future designers is influenced by the level of development of multimedia technologies and a personally oriented approach to education. The personal qualities of the future designer are becoming more and more important, namely: customer orientation, professional communication skills, time management skills, rational organization of the work process, teamwork, the ability to execute several projects in parallel, attention to details, responsibility for the result, self-development.

Despite the large number of scientific studies on the use of multimedia technologies in design education, taking into account the rapid dynamics of the development of multimedia technologies, this issue is not exhaustive and requires further research.

In the theoretical part of the present research, the significance of multimedia technologies in design education has been substantiated, the stages of development of this type of tools in the sphere of visual communications and the educational process have been traced, and the essence and components and features of the use of multimedia tools have been revealed.

The practical part of the research includes an assessment of the advantages of multimedia technologies in the educational field, an analysis of skills developed through the use of multimedia technologies in design, an overview of the basic areas of using design products created with the application of multimedia technologies, as well as studying the types of multimedia content that are most effective and in demand in practical activities, an overview of the forms of multimedia learning tools that will be especially in demand in the future, as well as an assessment of the directions for reforming higher design education.

Based on the results of the research, conclusions have been made regarding the prospects of using modern multimedia technologies as one of the most important directions for the modernization of the educational process.

2. Literature Review

The formation of new types of market relations and the activation of business operations in the Internet space require a significant number of professionally trained specialists who are able to make products competitive by improving their aesthetic qualities. The success of solving this important task requires heightened awareness to the professional training of designers, increasing the effectiveness of its structure, content and organization; it to a large extent depends on the supply of leading industries of the national economy with highly qualified personnel (Bian & Ji, 2021).

Modern people are increasingly surrounded by multimedia tools with a screen interface, with a specific set of actions and functions that are not characteristic of people of a non-technical civilization.

New technologies that expand the possibilities of information processing and understanding have always led to major changes in the development of civilization.

The choice of visual text as a design object per se primarily concerns applied graphics and graphic design, fields in which clear addressing of visualized information is a necessary prerequisite for effective work. The process of developing qualitatively new communicative environment thanks to the introduction of information technologies in various spheres of human activity, as well as the changes caused by this in the work of traditional mass media, the way of life and culture of people in general correspond to the logic of the transition of the modern society to sustainable development (Loboda & Denysenko, 2017).

The issue of studying the formation and development of the education system of designers in the world as a component of the general system of higher education and as an effective factor in the development of the design culture of society is gaining special relevance at the present stage (Wang, 2021)

As L. Fang notes, thanks to the rapid development of television and the Internet, a certain constantly developing visual world began to emerge. Neither the initial design of the 10s and 20s, nor the commercially oriented design of the 30s and 40s, nor the industrial design of the 50s and 60s, nor the electronic design of the 70s and 80s have experienced even a tenth of the modern interest in the visual world that is observed in economics, education and science nowadays (Fang, 2018).

According to the viewpoint of Y. Liu, the principal ideas of visualization, visual communication and orientation, visual forms and structures are implemented in the design of various objects and systems. If we take into account that visual orientation is the basis of numerous modern design concepts, then it is worth recognizing that the integration of visual awareness and creative activity that takes place in design is of great importance for it (Liu, 2018).

The standpoint of K. Goransson and A.-S Fagerholm is also of particular interest; the scholars note that the very functioning of the visual communication system – the process of designing visual messages, their transmission and

perception – can be considered a kind of design (Goransson & Fagerholm, 2018).

Fundamentalization, continuity and computerization of design education are directions that, at first glance, are not related to each other, but in modern scientific studies of higher education problems, these trends coexist as interdependent components of the same process - the growth of the quality of the fields of design and higher design education.

The basis of professional training of future designers is the creation of conditions for the development of systematic, integral theoretical and methodological knowledge, scientific, experimental, creative way of thinking, activity and communication of students (Zhu, Liu, Xie, Guo, Li & Ma, 2020; Zhan, 2022).

The issue of the fundamentalization of design education is mostly considered from the point of view of technical and technological provision of higher education, which is based on basic knowledge in the field of art history, architecture and engineering. However, the didactic aspect of the problem is insufficiently developed. In particular, there are no systematic studies showing the didactic foundations of the fundamentalization of education in relation to humanitarian education (Venkatraman, Alazab & Vinayakumar, 2019; Sinfield & Cochrane, 2018).

Q. Zhang agrees with this standpoint, emphasizing that the issue of fundamentalization acquires special importance on the way to the formation of higher design education. This is primarily due to the features of the professional activity of a modern designer, which is to a great extent scientific, intellectual and creative (Zhang, 2017).

3. Aims

The purpose of the research lies in determining the standpoint of specialists in the sphere of computer design and practising teachers of graphic and computer design specialities regarding the features of using multimedia technologies when working with visual communications and in design education.

4. Materials and Methods

The practical study of modern trends in the use of multimedia technologies in the sphere of visual communications and design education was conducted by interviewing 52 practising computer designers, as well as 64 teachers of graphic and computer design specialities who teach in 11 educational institutions of higher education in Volyn, Rivne, Zhytomyr and Kyiv regions of Ukraine.

The survey participants were asked to answer the questionnaire, evaluating their subjective standpoint regarding the raised questions in percentages from 0 to 100%. The answers to these questions are shown in the figures of the present research. The analysis of the survey results was conducted by processing the received data, namely, by calculating the average value of the answers of all survey participants.

The present research was conducted using the Survey Planet service.

5. Results and Discussion

The range of future areas of designer training should not only reflect the current needs of the society, but also take into account the dynamics of its development.

According to the survey participants' viewpoint, currently, in the context of a constant change in the content of knowledge and a constant increase in the amount of information in all countries, the reform of higher design education is taking place at an accelerated pace in the directions as follows (Figure 1).

- modernization in order to improve the quality of design education;
- diversification and integration with science and business processes;
- democratization;
- computerization.

Thus, according to the survey participants' viewpoint, currently the most promising directions for reforming higher design education are the computerization of this field and comprehensive improvement of the quality of design education.

In the course of the survey, the respondents have identified the following skills that develop thanks to the use of multimedia technologies in design, namely (Figure 2).
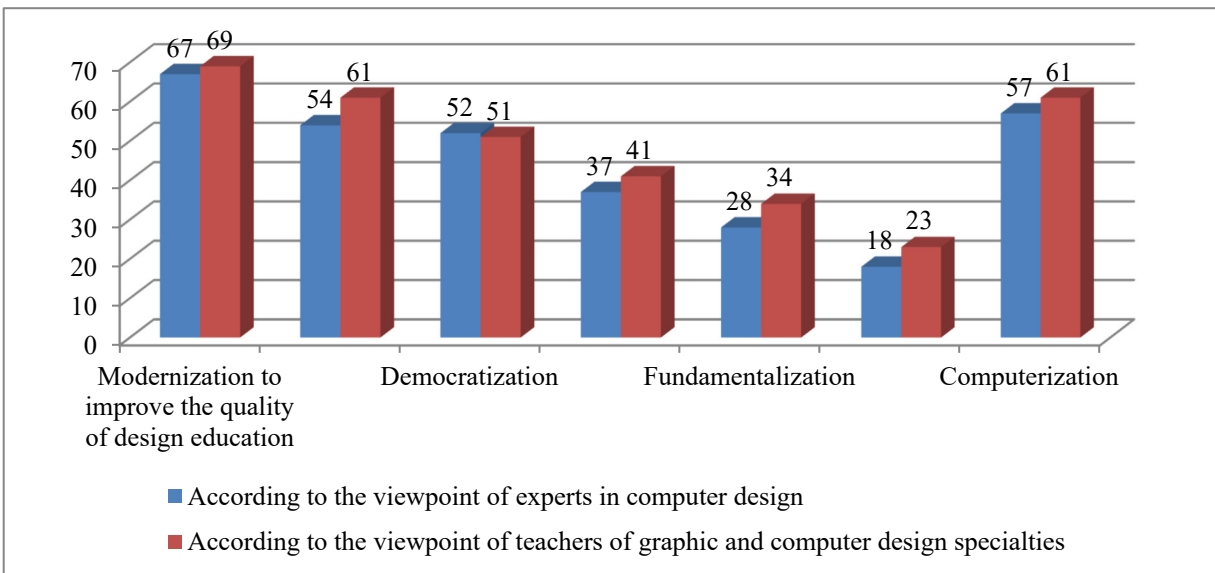
Figure 1. Directions of Reforming Higher Design Education, %
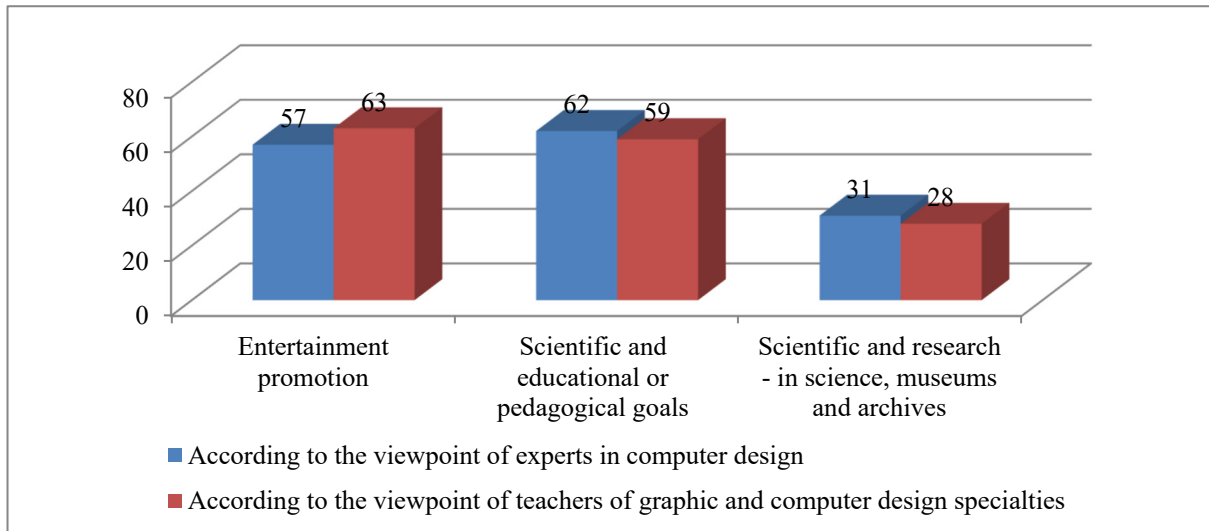
Source: it has been compiled by the authors.
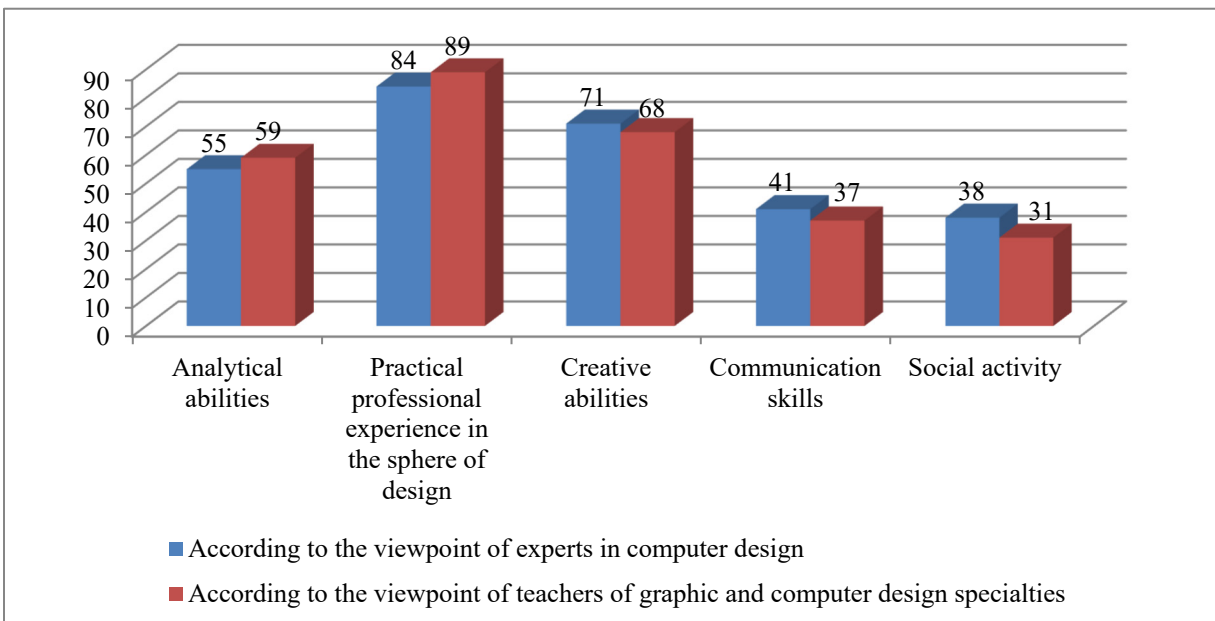
Figure 2. Skills Developed Thanks to the Use of Multimedia Technologies in Design, %

Source: it has been compiled by the authors.

–   analytical abilities;

–   practical professional experience in the sphere of design;

–   creative abilities.

At the same time, practical skills, related to applying and acquiring practical professional experience of design specialists, are most developed.

The principal areas of using design products created with the application of multimedia technologies, according to graphic designers and teachers of specialties related to computer design, are as follows (Figure 3).

Figure 3. The Principal Areas of Using Design Products Created with the Application of Multimedia Technologies, %

Source: it has been compiled by the authors.

–   entertainment promotion;

–   scientific and educational or pedagogical goals (used in the development of methodical materials).

In the course of the research, the respondents were asked to identify the types of multimedia content that are the most effective and in demand in practical activities. These types are as follows (Figure 4).
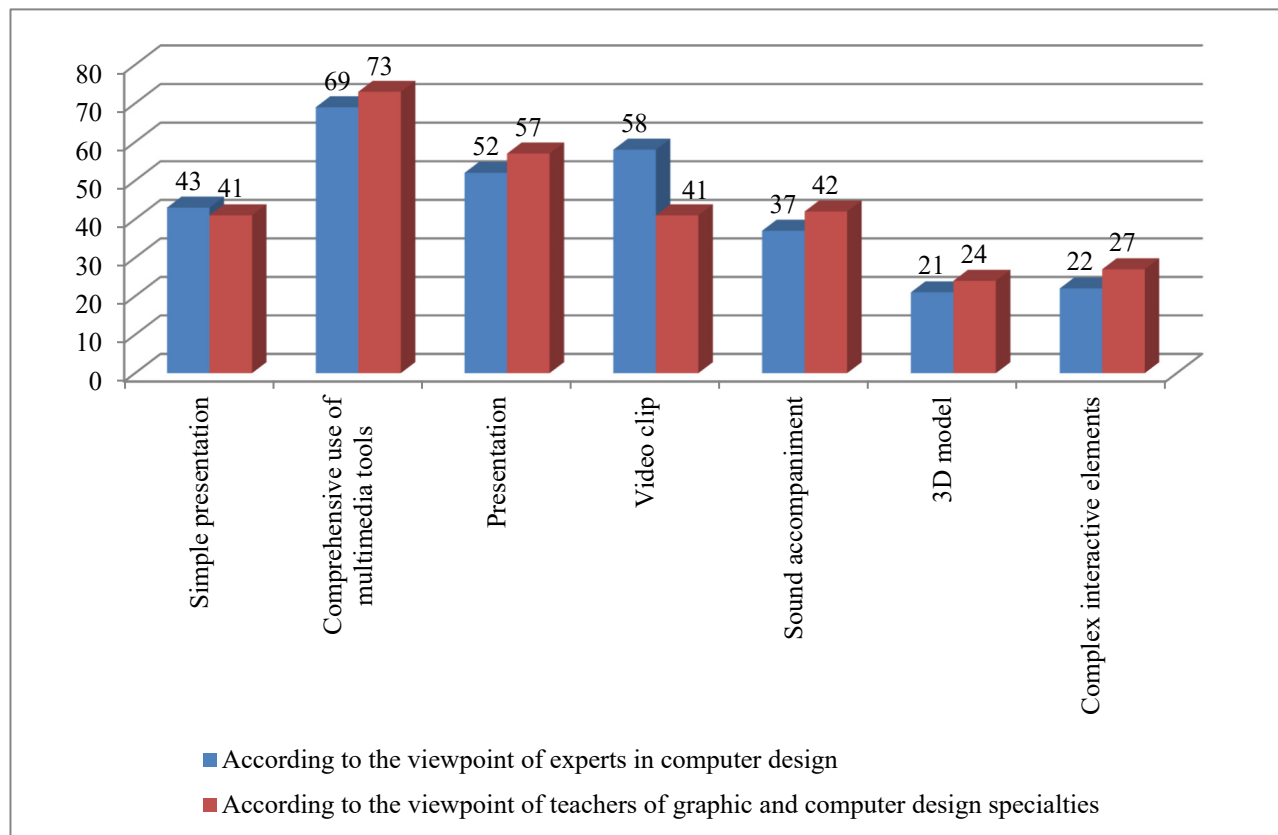
Figure 4. The Types of Multimedia Content That Are the Most Effective and in Demand in Practical Activities, %

Source: it has been compiled by the authors.

As the survey showed, comprehensive using multimedia tools, presentation and video clip are the most effective types of multimedia content in practical activities.

Regarding the most promising forms of multimedia learning tools, which, according to the survey participants' viewpoint, will be especially in demand in the future, the following ones have been identified, namely (Figure 5).
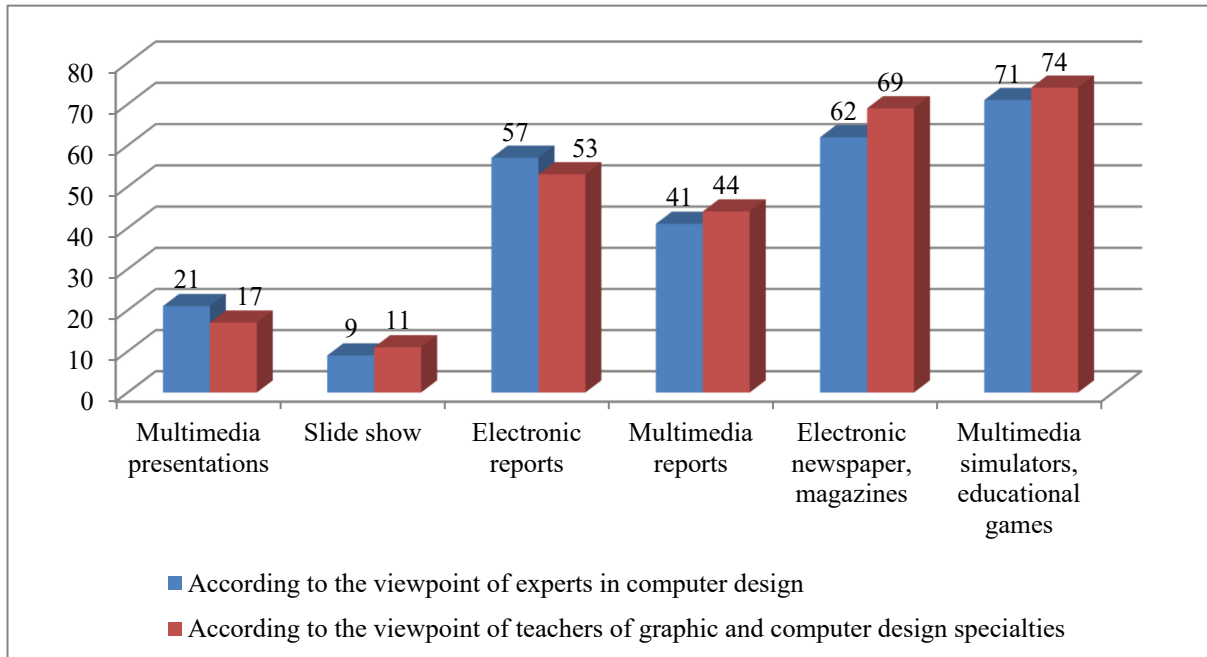
Figure 5. Forms of Multimedia Learning Tools That Will Be Especially in Demand in the Future, %

Source: it has been compiled by the authors.

‒ electronic reports;

‒ multimedia reports;

‒ electronic magazines and newspapers;

‒ multimedia simulators, educational games.

The advantages of multimedia technologies in the educational sphere, according to the survey participants' viewpoint, are as follows (Figure 6).

Therefore, the undeniable advantages of multimedia technologies in the educational field of design education are bright images to convey emotions, reproduction of reality using moving images, diagrams, reproduction of physical processes and phenomena.

The use of multimedia technologies in the educational process is relevant and problematic at the same time. When developing an educational system, it is very important to choose the relevant multimedia forms of information presentation, forasmuch as correct and complete perception and assimilation of the material depends on the correct choice of multimedia tools (Holubchak, 2021).

The study of scientific, educational and artistic publications, works of world researchers, normative and legislative acts on the investigated problem have shown that the development of design and preservation of its fundamentals is one of the priority areas of culture and education.

In addition, as evidenced by H. Pivo, over the past decades, design and designers have become tools for forming the image of social and economic progress of organizations. In connection with the increased necessity for high-quality design projects based on modern scientific and creative concepts and the best achievements of design schools in the world, the need for specialists who use multimedia tools in the development of design products is particularly acute (Pivo, 2019).
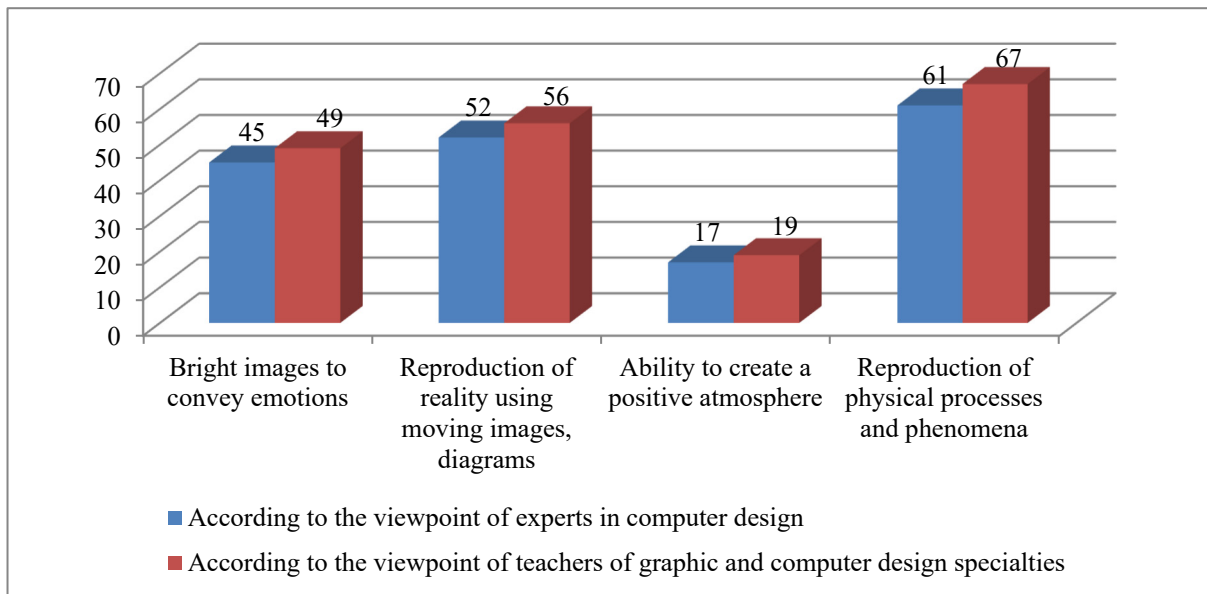
Figure 6. The Advantages of Multimedia Technologies in the Educational Sphere, %

Source: it has been compiled by the authors.

Multimedia design involves the development of the design and software part of the final product, as well as the creation of an ergonomic interface for interactive work with websites, catalogues, presentations, etc. (Kong, 2019).

Researchers single out new aspects of computer design, namely: computer virtual reality as a field of new design developments, the artistic aspect of multimedia design creativity, the methodology of automated project activity, the orientation of software computer tools to design tasks (Zhang, Hu, & Yang, 2021).

Interactive multimedia, which can be a medium, an object and a design environment at the same time, enhance the personal aspect of design.

The artistic specificity of multimedia design works is determined by the basic concepts of computer virtual reality: object, event, chronotope, interaction with the subject. The expressiveness of multimedia images is achieved by various visualization techniques, multisensory, spatio-temporal management of the virtual world (Liu, 2022).

The multimedia design system, which, like an artist's electronic palette, opens up unique opportunities for innovative creativity, is a vivid example of the implementation of a project approach, which is internally formed by simultaneous scientific and artistic research of reality. As a result of the inclusion of computer technologies in the activities of designers, the humanization of digital technologies takes place, which is a valuable phenomenon for the effective solution of design tasks, for the improvement of human-computer interaction mechanisms, for the development of the general culture of the world and business environment (Maher, Maher, & Mcalpine, 2018).

Computer technologies are impulses for the development of new methods, tools and technical skills, which make it possible to actively solve current artistic and creative challenges.

The media environment is technically multidisciplinary and changing; consequently, web design, art design, landscape design and television design belong to the specialized field of media design.

The development of computer technologies over the last decade has made it possible to significantly expand the scope of their use and to reach a new level of computer processing and information presentation. New technologies that are rapidly developing cover all new fields of knowledge and have applications both for scientific research and for educational or commercial purposes.

Multimedia products are the most effective form of information presentation in many spheres. Thanks to the synthesis of video-image, graphics, sound and text, high-quality products are achieved, which can be of important practical significance (Wu & Li, 2020).

The multimedia product allows comparing large and diverse amounts of information; it makes it possible to select interesting and relevant blocks of data through interactive interaction, and increase the efficiency of information

perception. The emergence of multimedia tools will certainly bring revolutionary changes in such spheres as education, social policy, as well as in many areas of professional activity, science, art, in the development of computer games, etc. (Hnatiuk, 2018).

High-quality professional training of a multimedia designer involves numerous factors. This includes a high level of knowledge, skills and mastery of the standards necessary to perform the professional capacities (Wall & Hall, 2019).

Multimedia technologies have an advantage in modern education due to the inherent qualities of flexibility, interactivity, consideration of individual educational and motivational features. The use and application of multimedia in education, along with its advantages, also has disadvantages, such as distraction, inaccessibility and difficulty in using the software without the help of a teacher (Maher, Maher, & Mann, 2018).

4. Conclusions

Therefore, the analysis of the scientific literature on the research topic and the results of the questionnaire have revealed that the use and application of interactive educational technologies in the process of professional training of future designers is an effective means of increasing the motivation and professional level of students. Such technological tools make it possible to bring learning closer to further professional activity and develop important skills of a degree-seeking student of design education: the ability to analytically approach tasks, generate creative solutions, work in a team and justify one's own concepts and ideas.

The use and application of modern information and communication technologies during their high-quality development and implementation in the educational process makes learning more effective, forasmuch as students have unlimited access to educational materials, and high-quality and original educational and methodological tools contribute to a significant increase in their didactic potential and the formation of a high professional level of future designers.

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