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5. Proceed with your search as usual, selecting other options you want to apply, and click Search.

For Acrobat 7 and earlier:

1. In the “Edit” menu, choose “Full Text Search”.
2. A new window will appear with search options. Enter your search terms and proceed with your search as usual.

SCIENTIFIC RESEARCH IN THE FIELD OF VISUAL COMPETENCY

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Abstract

Attractive areas of knowledge often require more effective training, creative thinking, access to new knowledge, syncretic participation of different arts, so the next generation of specialists need to develop their digital competence. In turn, it includes the creation of skills for work with digital technologies (computer, software applications, databases) and visual competence (also called visual literacy). Ensuring a positive educational environment at the university, stimulating individual interests, opportunities for high qualification and effective career development are prerequisites for successful realization. Visual literacy training is often conducted in majors oriented towards a professional field "Fine Arts", because students learn to create creative products needed for different business industries. This report aims to present scientific studies in the field of visual competence, with examples of scientific developments, monographs and project activities. The collected factual information has been analysed and summarized, as a result of which it has been established that the training in visual literacy is extremely important for the students, who are trained in the professional field "Public communications and information sciences".

Keywords: visual competence, visual literacy, scientific research, project activity.

1 INTRODUCTION

In the context of the studied problem, related to researches on visual competence, the topicality and significance of this report is determined by the knowledge-based economy and the development of new market-oriented specialties studied in a number of universities. Attractive areas of knowledge often require more effective learning, creative thinking, access to new knowledge, syncretistic participation of different arts, so learners need to develop their digital competence. In turn, it includes the creation of digital technologies skills (computer, software applications, databases) and visual competence (also called visual literacy). Particularly interesting is how the ideas related to visual competence cross the disciplines in the arts, humanities and social sciences.

2 METHODOLOGY

This paper aims to explore, analyze and present scientific researches related to visual competence over the last ten years. The subject of the study is the contemporary research projects in the field of visual competence. In order to achieve this goal, the following research tasks have been formulated: presentation of definitions of the concepts of visual competence, visual communication, visual literacy; research, presentation and analysis of scientific research related to the visual competence of the last decade; examples of successful projects are listed. In the present, thanks to their digital competence, professionals from different professional fields create visual messages, whether they have visual literacy or not. Communication structures today are influenced by amateur visual productions, global distribution of visuals, decontextualization of visual effects, which determines the actuality of the research. In the course of the study, examples of scientific expertise in the field of visual competence are searched that are oriented towards the training of students in the professional field "Public communications and information sciences". Much of the visual competency (visual literacy) research is related to the art education, which determines the importance of the present research. The collected factual information has been analyzed and summarized, as a result of which it has been established that the training in visual literacy is extremely important for the students, who are trained in the professional field "Public communications and information sciences". The results show that it is necessary to create new habits among the student community in a university information environment in terms of visual competence, in line with the digital environment. Visual literacy training is an example of Creative Teaching Strategies and Student Learning.

3 ESSENCE OF VISUAL COMPETENCE, VISUAL COMMUNICATION AND VISUAL LITERACY

Visual competence is a process in which individuals use their visual literacy. Visual literacy in turn is related to ideological thinking and grammar of imagery. A requirement for visual competence is the provision of training, as a result of which learners acquire skills such as visual thinking and have the necessary knowledge to realize visual communication. Visual competence consists of the following dimensions: Production Competence, Competence of Perception, Competence in Interpretation, Competence for Acceptance [15]. The development of visual competence is a fundamental training in visual communication.

Visual culture can be characterized as a visual event in which the user seeks information, meaning or feels pleasure with the type of media used. Using visual tools such as typography, illustration, graphic design, drawing, animation, visual communication can be realized. The visual presentation is actually sensation, selection and perception.

The term "**visual literacy"** was first introduced in 1969 by writer John Debs, co-founder of the International Association of Visual Literacy. He defines the concept of visual literacy as follows: "Visual literacy refers to a group of human's visual competences that can be developed by watching, including at the same time and other sensory experiences and sensory expertise. The development of these skills is essential for normal human life. When developed, they enable the visually literate person to distinguish and interpret visible actions, objects, symbols, natural or man-made with which he encounters in his environment. By making creative use of these skills, a visually literate person is able to communicate with others. By evaluating these skills, he is able to understand and enjoy the masterpieces of visual communication." Visual literacy is also defined as "the ability to understand, interpret and evaluate visual communications."[1] Another definition of the visual literacy: “Visual Literacy: The ability to interpret, use, appreciate, and create images and video using both conventional and 21st century media in ways that advance thinking, decision making, communication, and learning.

Visual literacy appears as a consequence of the change of society towards the "image-speech" attitude, with the present visual dominating over the verbal. With the change in technologies, images and visual presentations are changing. Visual literacy is related to visual perception, visual language, visual training, visual thinking and visual communication. Visual communication intertwines three elements – form, meaning and idea. The visual code is an abstract language of lines, shapes and colors that can create a visual message – an alternative to the tongue. A necessary condition for creating a visual message is not only knowledge of the technology for its creation but also the main means. The development of photography from analog to digital, the creation of image manipulation software products and the capabilities provided by the global image distribution and storage network, change the attitude of the public to visual information, i.e. to photography and graphic design products.

4 RESULTS

In the communication and information system of our society, visualization is playing an increasingly important role, so the creation of professional organizations – associations and networks related to visual competence (visual literacy) has an important role and importance. The role of such organizations is to create the conditions for conducting research, to take part in the process of creating norms and standards on visual literacy training, and to carry out project activities.

4.1 Role and importance of associations and networks related to visual competence

4.1.1 International Visual Literacy Association

The International Visual Literacy Association is an interdisciplinary organization of professionals working in the field of visual competence, set up in 1968. The organization brings together people who aim to enhance visual culture, create visual works, and support visual literacy education. Since its establishment until today, an annual scientific conference is also held. The 2019 International Visual Literacy Conference will take place in Leuven, Belgium, from 16-19 October. (51st Annual Conference of the International Visual Literacy Association). This year's theme is 'Navigating the visual: Crossing the boundaries of theories and practices' and the conference will bring together different theoretical viewpoints and practices on visual literacy, joining scholars, students, and practitioners from all over

the world in an interesting exchange of ideas. The conference is open to contributions on new theoretical insights, media, innovative practices and methodologies on assessment and evaluation. [9]

4.1.2 Common Framework of Reference for Visual Literacy: Guidelines for Figures and Tables

In 2010 "**European Framework of Reference for Visual Literacy**"is created that starts the creation of **Common Framework of Reference for Visual Literacy** (CEFR-VL). Table 1 presents the three levels of sub-competency creation in terms of visual literacy. [6]

Table 1: Example of a scale of levels in respect to the sub-competency create

Level	***Description***
Elementary	Can select familiar motifs and topics for a draft or realization that are appropriate for his/her intention and use pre-set artistic means. Can apply rules and principles, as well as the results of experimentation when producing an appropriate form.
Intermediate	Can choose appropriate content, motifs and topics on the basis of suggestions and under consideration of what he/she intends to depict. Can select artistic means and strategies from among a number of options and use them appropriately. Can take into account artistic rules but break them to a certain extent in order to achieve a desired effect.
Competent	Can use a range of contents, motifs and topics and give them an adequate form under consideration of the intended effect. Can use methods and strategies purposefully and in a targeted manner or experimentally in order to enhance his/her artistic expression. Can reflect critically on rules and conventions with regard to a specific effect and consider them when producing (follow or break them).

Source: http://envil.eu/wp-content/uploads/2014/05/ENViL_basic.pdf

The European Framework of Reference for Visual Literacy has the following working groups: Assessment / Visual rubrics; Competence levels; Museum Education; Theory of artistic thinking; Revision of the model; Science, Technology, Engineering, ARTS and Mathematics (STEAM with Arts Emphasis) Working Group. [8] Each of the groups is engaged in specific research. Currently, Competence levels and Museum education do not carry out research. The web site of the European Visual Literacy Framework has published the results of the individual working group studies, as examples of which can be mentioned the following titles of scientific publications focusing on visual literacy in the field of arts: Comparative studies concerning models of Visual Literacy and their approaches of competencies development, Interim Report on the German Approach to Quantitative Assessement of Visual Literacy, Competencies in Art Education: Assignment, Assessment and Educational Contexts (Diederik Schönau), Visual Competencies Required in a Certain Situation.

Avec le Cadre Européen Commun de Référence pour la Visual Literacy is created by Common European Framework of Reference for Visual Literacy and is the first transnational and European description of the area of learning of "Visual Literacy". Surveys have been conducted throughout Europe in the period 2014-2016 and are an important tool for the future development of competence-based curricula, training assessment, task-building, teacher training and development of learning materials. [4]

4.1.3 Association of College & Research Libraries - Visual Literacy Competency Standards for Higher Education

In 2011, the Association of College & Research Libraries (ACRL) adopted standards for visual literacy training in higher education. Visual competence is accomplished by applying seven abilities:

- Determine the nature and extent of the visual materials needed
- Find and access needed images and visual media effectively and efficiently
- Interpret and analyze the meanings of images and visual media
- Evaluate images and their sources
- Use images and visual media effectively
- Design and create meaningful images and visual media

- Understand many of the ethical, legal, social, and economic issues surrounding the creation and use of images and visual media, and access and use visual materials ethically. [2]

Standards in Visual Literacy Training in Higher Education:

- The visually literate student determines the nature and extent of the visual materials needed.
- The visually literate student finds and accesses needed images and visual media effectively and efficiently
- The visually literate student interprets and analyzes the meanings of images and visual media.
- The visually literate student evaluates images and their sources.
- The visually literate student uses images and visual media effectively.
- The visually literate student designs and creates meaningful images and visual media.
- The visually literate student understands many of the ethical, legal, social, and economic issues surrounding the creation and use of images and visual media, and accesses and uses visual materials ethically.[2]

4.2 Scientific research in the field of visual competence

Scientific researches in the field of visual competence internationally began in the late 1960s. Studies by William Mills Ivins, Rudolf Arnheim, Dondis Dondis, Debes are related to the essence of visual literacy, the use of visual techniques and elements in the creation of visual content. Other researchers, such as Müller, Nancy Frey, Douglas Fisher, Ajay Kumar, Rick Williams, Julianne Newton, Billie Eilam, examine visual literacy (visual communication) and application and learning. Research since 2000 has been related to the integration and teaching of visual-literacy disciplines oriented to the media, science and art.

In the scientific work of Sjoerd De Vries, the University of Twente, themed Visual Literacy and Visual Communication for Global Education: Innovations in teaching E-learning in Art, Design and Communication, the concept of an experimental course is presented – a web-based course on information and graphic design. The training is conducted in small learning communities. The purpose of this experiment is to find how students can read and write through images and which factors influence this process. [14]

В изследване на Marion G. Müller от 2008, на тема: Visual competence: A new paradigm for studying visuals in the social sciences? е засегнат въпросът за необходимостта от въвеждане на нова изследователска парадигма - "визуална компетентност" - в социалните науки (антропология, комуникационни науки, медии и социална психология, политология, социология).[12]

In a study by Marion G. Müller in 2008, on the subject: Visual competence: A new paradigm for studying visuals in social sciences? the question of the need to introduce a new research paradigm – "visual competence" – into the social sciences (anthropology, communication sciences, media and social psychology, politics, sociology) is researched. [12]

Good examples of scientific research related to visual competence made in the present is a study by Anneliese Tillmann and Sumer Seiki, Faculty Advisor, Illinois Wesleyan University of Illinois. In the Anneliese Tillmann publication, "What We See and Why It Matters: How Competence in Visual Literacy Can Enhance Student (2012)" is presented a study focused on how visual competence can be used in the learning process. One of the ways to acquire visual literacy is the graphic design where learners create author's visual content. Integrating learning related to the virtual literacy is a new method of developing the ability to interpret, understand and express ideas through visual images. Such training is necessary due to the multi-aspected application of visualization and the need to provoke visual thinking. The development of abilities through graphic design leads to understanding and communication in visualizations. [1]

In a scientific research by Marilyn Ostergren – How scientists develop competence in visual communication from 2014, the subject of the study is the visual competence of the student and scientific community. As a result of the survey, Ostergren presents a strategy for training course where specialized visual communication training (through graphic design training and online portfolio development) plays a key role, and the main purpose of such training is to develop the visual competence of pupils, students and lecturers. [11]

In a study by Julia Oberundorfer „Über das Werk des bildenden Künstlers Markus Oberndorfer Kinder erleben die Fotokunste“from 2016 the concept of using photography as a method of visual education in elementary school was presented.

Another example of scientific research in the field of visual competency is Theo Hug’s "Media competency and visual literacy – towards considerations beyond literacy". In this study, the emphasis is on a new educational aspect – the need to create a media competence training system that is oriented to creating media literacy, visual competence and visual literacy in media education. [16]

These examples of scientific researches in the field of visual competence testify to the need to present such education in the educational process both in secondary education and in universities. The skills that future art specialists and specialists trained in the professional field of “Public communications and information sciences” must have are:

Have Working Knowledge of Visuals Produced or Displayed through Electronic Media

- Understand basic elements of visual design, technique, and media.
- Are aware of emotional, psychological, physiological, and cognitive influences in perceptions of visuals.
- Comprehend representational, explanatory, abstract, and symbolic images.

Apply Knowledge of Visuals in Electronic Media

- Are informed viewers, critics, and consumers of visual information.
- Are knowledgeable designers, composers, and producers of visual information.
- Are effective visual communicators.
- Are expressive, innovative visual thinkers and successful problem solvers.[5]

4.3 Project activity in the field of visual competence and visual literacy

The project activity related to the creation of key competences, as well as visual competence, is part of the European Union's policy on cultural education. One of the leading concepts in the present is the formation of a European identity, and the common among the different individuals is visual literacy. EU policy in the field of cultural education (arts education) is to promote artistic skills, knowledge and understanding, engage in diverse forms of art and enhance cultural understanding. EU Member States work to develop the key competences of cultural awareness and expression and its integration into education policies for professional training and lifelong learning. Visual literacy is a key competence and part of the curriculum in art schools. At the higher education level, emphasis is placed on theoretical issues and art history, daily aesthetics, visual media, design and architecture. [7]

4.3.1 Visual Literacy within Cultural Education

Visual Literacy within Cultural Education is funded by the German Federal Ministry of Education and Research (BMBF) and separated into two interconnected sub-projects, i.e. the sub-project „BKKB-Assessment” led by Prof. Dr. Ulrich Frick at the HSD University of Applied Sciences in Cologne and the sub-project „BKKB-Instruction” led by Prof. Dr. Katrin Rakoczy at the DIPF | Leibniz Institute for Research and Information in Education in Frankfurt am Main. The project period runs within 2016-2019. Within this project an evaluation tool has been developed and tested for one of the main competences in the field of cultural education, namely visual literacy. [3]

4.3.2 VISUAL LITERACY @ LESLEY

The VISUAL LITERACY @ LESLEY project takes place at the College of Art and Design (Lesley University Library). Leslie University Library offers a visual literacy instruction and develops resources to help lecturers and students use visual information. [17] Workgroups offer courses related to engaging critical thinking, exploring visual resources, using different visual tools in the learning process (2D and 3D imaging, TV, cinema or photography, Sketchbook), using graphics, maps and design thinking for interpretation and generating visual information. [10]

4.3.3 New Transgenerational Visual Literacy

The New Transgenerational Visual Literacy (NTVIS) project was launched in 2012. Partners are Spain, Greece, Bulgaria, Slovenia, Poland, Turkey. The concept of the project is to develop and

promote new transgenic visual training by introducing interactive visual competence and visual intergenerational literacy to create new learning content. The objectives of the project are oriented to: overcome the difference in visual literacy among young people and adults; conducting specialized training of library specialists; offering curricula. [13]

4.3.4 Creation and development of educational and scientific facilities for documentary and applied photography as part of the training of students in the professional field 3.5 "Public communications and information sciences"

An example of another project oriented towards the introduction of visual literacy training in specialties from the professional field “Public Communications and Information Sciences” is a project of young scientists from the University of Library Science and Information Technologies in Bulgaria. The project is called "Creation and development of educational and scientific facilities for documentary and applied photography as part of the training of students in the professional field 3.5 “Public communications and information sciences”. The main objective of the project is the formation of the visual literacy of students who are trained in specialties in the professional field “Public Communication and Information Sciences” at ULSIT in hours of documentary and applied photography. Within the project will be developed appropriate theoretical content and seminar exercises in a specialized educational and scientific base for documentary and applied photography in ULSIT. [18]

4.3.5 Application of the mixed reality in the training and promotion of the cultural heritage for the purposes in the university information environment

Hence, the aim of this project is to show the possibilities of the virtual and added reality through the so defined mixed reality in training and promotion of historical-cultural heritage for the benefits of the users. The presentation of the cultural and historical heritage based on the Augmented Reality (AR) technology will enable visitors to interact with the content in an intuitive and exciting way. It is a technology that expands the perceived reality at the expense of complementing the visible and tangible world with digital information in real-time. Another goal of the project is to develop new learning opportunities for the students by creating virtual sites of historical-cultural heritage. A real 3D model of the ancient towns will be created within the project. During the educational process students will be able to get acquainted with the virtual objects of the historical-cultural heritage via virtual reality glasses. They will be able to learn about these 3D models and how to create such models. Within the framework of the project, for the first time, an opportunity will be presented for the application of mixed reality and Virtual Social Networks in the training for the purposes of historical-cultural heritage. This methodology is popular in the leading universities worldwide such as Prince, Harvard, Duke, etc. They create virtual affiliates and museums in which their students can attend lecture virtually. Individual virtual objects will be also shown.

5 CONCLUSIONS

Visual culture is an interdisciplinary concept and is particularly important for future-oriented cross-cultural thinking. These examples of international organizations related to visual competence, the examples of scientific researches and project activity testify to the need for visual competence in various professional fields. Over the last decade, it is necessary to include new education programs in the education system that meet the needs of the generation and the need to create new capabilities that are applicable in the future. Young people need to be able to create, analyze and evaluate creative concepts with a variety of instruments such as music, performing arts, literature and visual arts. Access to software products in a university environment provides students with the ability to truly become authors of intellectual products, such as various graphic and photographic images.

Education requires continuous innovation in its paradigms and teaching approaches. The creation of standards in visual literacy training is a result of the development of technologies. An approach to enhancing the competence of learners is to establish a link between learning, motivation and interaction between learners. Visual competences allow full participation in culture and the visually focused community. Ensuring a positive educational environment, stimulating individual interests, opportunities for high qualification and effective career development are prerequisites for successful realization. As a result of the study, it can be concluded that the visual literacy training is often performed in majors studying fine arts or graphic arts. Of great importance for the students who are trained in the professional field “Public communications and information sciences”, in specialties, preparing librarian-information specialists, archivists, specialists in the field of press communications

and publishing, media information and advertising, etc. is their knowledge and skills to be relevant to the present. Integration of web-based courses, graphic design training, photography training is an example of learning the experience, resulting in more effective training. Using such approaches in the education process is an example of cultural education.

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