# CONCEPTUAL FRAMEWORK OF DIGITAL VISUAL LITERACY

**K. Rasheva-Yordanova, K. Planska-Simeonova**

*University of Library Studies and Information Technologies (BULGARIA)*

## Abstract

The rapid pace of technological innovation highlights consumers' problems with their relationship with the digital world. Visual literacy as a term that evolves and is related to the essential characteristics of contemporary culture is closely linked to the transition from the classic vision of the artwork to its contemporary development in the direction of a technologically created image. In the context of digital technologies, the user needs both digital skills and visual skills, which are a prerequisite for perceiving information, managing demand, and apply functional literacy. In recent years, the term digital visual literacy has been discussed, and some researchers have looked at visual literacy as an element of the term "multi literacy" describing the changing way of communication between people and new technologies. The purpose of this report is to analyse the link between visual literacy and the concept of digital literacy. We are working on the hypothesis that the development of digital skills depends to a certain extent on the possibilities of visual presentation, perception and visual thinking. We believe that the limited visual repertoire is a direct cause of the digital skills shortage among consumers in today's society. The results of the analysis have allowed us to shape a framework of skills falling both in visual and digital literacy. This framework would serve to build a curriculum for digital visual literacy. As a result of the study, it is outlined the possibility of further studies related to digital visual literacy.

## 1 INTRODUCTION

The term “literacy” that can simply be defined as the ability to read, write, communicate and understand, has become a key concept in education [12]. At the same time, the same word (literacy) is used in the sense of both language literacy and mathematical literacy – numeracy, and not rarely literacy in the natural sciences and technologies. In this way, literacy functions in a narrow (reading and writing, i.e. mainly to refer to “readable” and / or linguistic literacy) and in a broad sense (understood as a complex of “literacies”, but often also seen as synonymous with competencies).

Until recently the concept of literacy is frequently used in the same meaning with reading and writing skills. This traditional perception dates back to the period when printed media was dominant and it considers the literacy as the skills of reading and writing and as the process of acquiring cognitive skills [30].

Internationally, a number of steps have been taken repeatedly to unify the concept of literacy. The following definition of literacy was adopted at the UNESCO International Expert Meeting in 2003: “Literacy is the ability of a person to identify, understand, interpret, create, exchange, communicate, calculate, using printed and hand written text materials related to different types of context. Literacy is a continuous and uninterrupted process of education and/or learning that enables a person to achieve his goals, develop his knowledge and potential, and participate fully in the community and society to which he belongs.”

Practically, literacy includes not only the reading and writing skill but also the mental processes that require processing and interpreting the information at a conceptual level [30].

Technological, social and cultural developments have widened the content of the literacy concept during the course of time and caused the emergence of new literacy types. Terms have emerged describing specific skills such as functional literacy, information literacy, reproduction literacy, etc. In addition, with the widespread adoption of technologies, more modern forms have been discussed such as media literacy, ICT literacy, Internet literacy, digital literacy. With the advancement in technology and digitizing of information, digital visual literacy has evolved [12]. We live in a visual age that reshapes social processes, communication, ways of perception and interpretation [30]. The emergence of visually-oriented technologies such as the Internet, smart phones, social media, mobile applications, video games, virtual reality, and more, determine the transition from print pages to digital images. For its part, the development of communication technologies has led to changes in the concept of literacy. The ability to understand digital, visual and audio media is a form of literacy that is as basic as are the reading and writing skills (the ability to understand digital, visual and audio media is a form of literacy which is as


*ISBN: 978-84-09-14755-7*

basic as reading and writing skills) [24]. According to Duchak, visual literacy is required today as much as text literacy.

In the context of digital technologies, the consumer needs both digital and visual skills, which are a prerequisite for information perception, demand management and functional literacy application. This has made it possible in recent years to introduce the term digital visual literacy [12, 23], and some researchers consider visual literacy as an element of the term “multiliteracy”, describing the changing way of communication between people and new technologies.

The purpose of this report is to analyze the relationship between visual literacy and the concept of digital literacy. We are working on the hypothesis that the development of digital skills somewhat depends on the possibilities of visual representation, perception and visual thinking. We believe that the limited visual repertoire is a direct cause of the lack of digital skills among consumers in today's society. The results of the analysis allowed us to formulate a framework of skills falling in both visual and digital literacy. This framework would serve to build a digital visual literacy curriculum. As a result of the research the possibility of further research related to digital visual literacy is highlighted.

This report is organized into three sections, as follows: The first section provides an overview of the concept of “visual literacy”. The second section analyzes the link between visual literacy and other literacies. The third section presents a framework for digital literacy skills.

## 2 VISUAL LITERACY AS A FUNDAMENTAL LITERACY

The term visual literacy is not a new concept at all. It is also important to note that contrary to popular misconceptions of some people, being visually literate does not at all require a person to be an artist, skilled in drawing, painting or film making [26]. Some authors think that visual literacy also involves problem solving and critical thinking and can be applied to all areas of learning [2].

The term visual literacy has been widely discussed over the years, with many authors working to upgrade the existing framework. The concept of visual literacy is constantly changing and nuanced in relation to the spread of modern visual technologies and developing perceptions of literacy.

The following table presents some of the existing definitions of the term, some of which overlap and others complement the existing ones.

*Table 1. Visual Literacy definitions [29].*

| ***Author, Year*** | ***Definition and Interpretation of “Visual Literacy” term*** |
|---|---|
| Dondis, 1973 [7] | Visual literacy implies understanding, the means for seeing and sharing meaning with some level of predictable universality. |
| Braden and Hortin, 1982 [25] | visual literacy is the ability to understand and use images, including the ability to think, learn, and express oneself in terms of images. |
| Glorgis, Johnson, Bonomo, Colber, & al, 1999 [6] | Visual Literacy is the “ability to construct meaning from visual images”. |
| Bamford, 2001 [1] | Visual literacy is defined as student’s ability to “use, interpret, analyse, and think critically about visual images and the significance of what they are seeing”. |
| David M. Kennedy, 2008 [8] | The ability to critically understand and use images to articulate knowledge and communicate ideas |
| Moti Frank, 2008 [20] | The ability to look at visual information with perception. A visually literate person understands how visual elements contribute to the meaning of the whole. |
| Stephenie Hewett, 2009 [27] | The ability to look at charts, graphs, pictures, and other visual images to grasp an intended message. |
| Laura D. Hoffman, 2011 [17] | The ability to know how images affect and influence society or how they affect what an individual likes and dislikes. |
| Lesley S. J. Farmer, 2015 [28] | The ability to understand, create, and use visual messages. |
| Maura C. Flannery 2015, [19] | An array of abilities related to understanding, using, and creating visual information. |

| | |
|---|---|
| Dragana Martinovic, 2015 [9] | Ability to see, discriminate, and interpret the visible natural or artificial objects and symbols in the environment. |
| Julie A. Delello, 2016) [13] | The ability to create, understand, and communicate through the use of visual images. |
| Iram Mukhtar Mahajan, 2016 [16] | The ability to interpret, negotiate, and make meaning from information presented in the form of an image. |
| Jennifer Munday. 2017 [15] | Using and understanding the meanings of images. These meanings may be literal, symbolic, or metaphoric. |
| John Ewing, 2017 [14] | The ability to interpret, negotiate, and make meaning from information presented in the form of an image, extending the meaning of literacy, which commonly signifies interpretation of a written or printed text. Visual literacy is based on the idea that pictures can be “read” and that meaning can be through a process of reading |
| Maria Ranieri, 2018 [21] | Analysis and production competences in the use of still and moving images to deliver messages. |
| Anastasia D. Vakaloudi, 2019 [3] | The ability to interpret, negotiate, and make meaning from information presented in the form of an image. |
| Paulo M. Barroso, 2019 [31] | The cultural and practical skill to read / understand what images show according to their rhetorical strategy. Visual literacy is focused on the potentialities of the image, on the suggestive and evocative power of images, on what images shows and suggests (the implicit, the unseen). |

Based on the researchers' views on the definition of the “visual literacy” term, it can be summarized that visual literacy:

- Extends the importance of general literacy that is associated with reading and writing – visual literacy is associated with the action of reading images;
- Requires skills for interpreting, negotiating and comprehending information;
- Associates with critical and analytical thinking;
- In the context of digitalization and globalization, visual literacy is closely linked to digital skills.

It turns out that along with text literacy and reading skills, visual literacy is the intersection of other specific skills. The link between them will be discussed in the next section.

## 3 CONNECTION OF VISUAL LITERACY WITH OTHER LITERACIES

Visual literacy deals with visual events where the information, meaning or pleasure is sought by the user at the point of interaction with visual technology. By visual technology, we mean any form used to interact with objects displayed (from oil painting to television and the Internet).

In the course of its development, visual literacy has been associated with other literacies – general literacy, information literacy, media literacy, digital literacy. Petterson [33] regards visual literacy as „interdisciplinary, multidisciplinary and multidimensional area of knowledge“.

From reading the literature in this field it is quite clear that visual literacy is a broad and interdisciplinary concept including elements from several established fields:

- According to Heinich et al. [34] there is a connection between visual literacy and print literacy, where: „Visual literacy is the learned ability to interpret visual messages accurately and to create such messages. Thus interpretation and creation in visual literacy can be said to parallel reading and writing in print literacy“
- Sinatra [35] connected visual literacy to thinking, reading and writing. According to the author „visual literacy becomes the basic literacy in the thought processes of comprehending and composing which underlie reading and writing“
- According to Lacy [18] visual literacy is a communication skill like verbal literacy. According to the author „visually literate persons can both mentally image and communicate to others by producing a visual message themselves“

- Visual literacy involves problem solving and critical thinking and can be applied to all areas of learning [2].

We support the understanding that visual literacy is a fundamental literacy made up of specific skills, but it can also be seen as a basic skill for other literacies (Table 2).

*Table 2. The connection between Visual Literacy and other literacies and skills.*

| ***Literacy*** | ***Definition of Literacy*** | ***Connection with visual skills*** |
|---|---|---|
| Computer Literacy | an understanding of computer characteristics, capabilities, and applications, as well as an ability to implement this knowledge in the skilful, productive use of computer applications suitable to individual roles in society. [22] | Required ability to work effectively through graphical communication with user interface or digital images. |
| Reproduction Literacy | Abilities to recreate and repurpose existing digital contents including text, sound, images, graphics, and videos into a new format using digital production capabilities [4] | The ability to create meaningful, authentic and creative graphic work or interpretation by integrating existing independent pieces of information or images. |
| Real-time thinking | The ability to process and evaluate large volumes of real-time information. | Ability to receive information from images (infographics) in real time. |
| Information Literacy | The set of skills required to locate, evaluate, use, and properly cite information [36] | The skills needed to find, analyse, remember and use an information or graphic image. |
| Photo-visual Literacy | Ability to work effectively through graphical user interface communication [32] | This helps to “read” intuitively and freely, and to understand the instructions and messages represented visually |

Based on the information presented in the table above, as well as the review carried out in section 1, we can summarize the skills included in the classical concept of visual literacy:

- Analytical and critical thinking;
- Real-time thinking;
- Skills for searching and evaluating the form, structure and characteristics of graphically presented information;
- Reading and writing skills.

Some authors accept “Visual literacy” as the technical knowledge required to communicate through visual means [11]. Digitalization of the available information and technological changes that have led to the emergence of a new term that serves to name specific literacy based on both computer and visual skills. In recent years, the term digital visual literacy has been discussed, and some researchers consider visual literacy as an element of the term “multiliteracy”, describing the changing way of communication between people and new technologies. The next section will offer a framework for skills involved in digital-visual literacy.

## 4 DIGITAL-VISUAL LITERACY SKILLS

The authors [12] consider the term “Digital Visual Literacy” as the ability to construct meaning from digital visual images. The authors think that It is the ability to create and interpret computer-based visual materials effectively and has become a key aspect of virtually every field, from the sciences to commerce to communication and entertainment.

Digital visual literacy is required in a wide range of tasks, both inside and outside the workplace. Computers have fundamentally changed the nature of visual communication, in part because they enable a powerful abstract encoding of visual images and models for the first time in history. Because visual information is represented mathematically, it can be replicated, modified, and shared in new ways. Unlike previous visual technologies (from oil paint to the microscope), computer graphics is easily accessible to amateurs [12].

The transition from classic visual literacy to digital visual literacy has been widely discussed in recent years:

- Chouvin, 2003 [5] thinks that Digital visual literacy can be defined as „the ability to access, analyze, evaluate, and communicate information in a digital format that engages the cognitive processing of a visual image".
- Spalter & Tenneson, 2006 [37] consider that to be a "literate" citizen, one should be able to evaluate digital visual materials, use digital visual representations of data and ideas in decisionmaking, and create effective visual communications using computers"
- Edith Avni, 2016 [10] points that digital visual literacy is the ability to critically read, understand and analyse and to produce meaning from information and messages presented in visual, digital texts, to communicate and transmit visual messages effectively, to create and produce presentations expressing visual messages, by consideration and selection of how to present them.
- Martin, Florence et al., 2019 [12] present Digital Visual Literacy as the ability to construct meaning from digital visual images. It is the ability to create and interpret computer-based visual materials effectively.

  Digital visual literacy combines skills that build both digital and visual literacy.

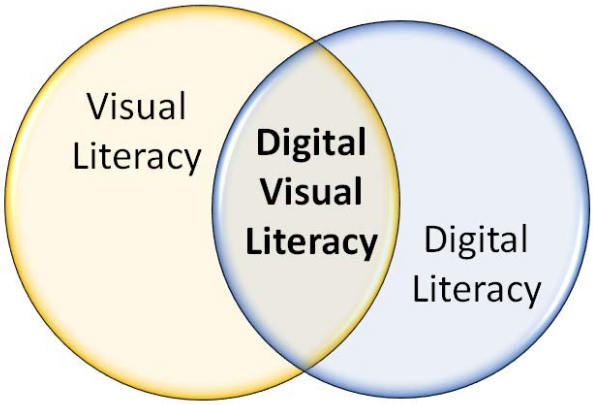


*Figure 1. Digital visual literacy as the intersection between digital and visual literacy.*

*Table 3. Digital visual literacy – general framework.*

| | ***Digital Literacy*** | ***Classic Visual Literacy*** | ***Digital Visual Literacy*** |
|---|---|---|---|
| Skills | Critical Thinking<br>Technical skills<br>Information literacy<br>Photo-Visual Literacy<br>Reproduction Literacy<br>Reading and Writing skills | Analytical and critical thinking;<br>Real-time thinking;<br>Information Literacy<br>Reading and writing skills. | Analytical and critical thinking;<br>Real-time thinking Information Literacy<br>Reading and writing skills.<br>Technical skills<br>Photo-Visual Literacy |
| Forms | Multimedia documents and digital images | Printed or painted materials | Multimedia documents and digital images |
| Resources | Digital and digitalized online and offline resources | Printed or painted materials | Digital and digitalized online and offline resources |

We are moving towards simplifying information where complex texts are presented using images (infographics). Interactions with modern Internet access technologies require users to read and write in addition to possessing the necessary set of technical skills, information literacy, opportunities for analysis and critical thinking skills. In the digital environment today, visual skills are as necessary as digital skills.

## 5 CONCLUSIONS

Understanding visual literacy is undergoing a dynamic evolution depending on the frequency of change in the communication channel. In the contemporary conditions of technological innovations, it appears that along with the need to have functional literacy for writing and reading, as well as digital skills to work with technical tools, today consumers are expected to possess visual literacy adapted to the digital environment. This digital visual literacy includes a set of skills among which: analytical and critical thinking, real-time thinking, information literacy, functional literacy, technical skills (digital literacy), as well as photo-visual literacy. Lack of any of these skills will lead to inequality among members of the society on the occasion of this skill, and it can, in turn, unlock a form of digital divide based on visual skills.

This report provided an overview of the concept of visual literacy and specified the connection between visual literacy and other literacies. The presented general framework can serve to build a digital visual literacy training curriculum.

## ACKNOWLEDGEMENTS

This research would not have been possible without the financial assistance of the following project: "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" financed by National Science Fund of the Ministry of Education and Science of the republic of Bulgaria with Contract № KP-06-M30/3 from 13.12.2018, led by Assistant Doctor Kamelia Planska-Simeonova.

## REFERENCES

[1] A. Bamford (2001). The grammar of visual literacy within the world of interactive media.Paper presented at the Education Research Network Conference on Learning. Spetses, Greece // https://files.eric.ed.gov/fulltext/ED458633.pdf, 08.09.2019.

[2] A. Bamford (2003). The Visual Literacy White Paper. Adobe Systems. Retrieved from https://www.aperture.org/wp-content/uploads/2013/05/visual-literacy-wp.pdf он 08.09.2019.

[3] A. D. Vakaloudi (2020) Concepts of Propaganda: Educating Responsible Citizens by Integrating Multiple Intelligences and Learning Styles Into a Smart Learning Environment. Examining Multiple Intelligences and Digital Technologies for Enhanced Learning Opportunities. IGI Global, 10.4018/978-1-7998-0249-5.ch010, https://www.igi-global.com/chapter/concepts-of-propaganda/236471

[4] Anirban Ray (2018) Digital Literacy. Encyclopedia of Information Science and Technology, Fourth Edition. IGI Global, DOI: 10.4018/978-1-5225-2255-3.ch193, https://www.igi-global.com/chapter/digital-literacy/183935

[5] B.A. Chouvin (2003) Visual or Media Literacy. Journal of Visual Literacy, 23, 2, 119-128.

[6] C. Glorgis, N. J. Johnson, A. Bonomo, C. Colber (1999).Visual Literacy. Reading Teacher, 53 (2), 146 -153.

[7] D. A. Dondis (1973). A primer of visual literacy. Cambridge, MA: Massachusetts Institute of Technology.

[8] D. M. Kennedy (2008). Digital Literacy Research. Encyclopedia of Information Technology Curriculum Integration, DOI: 10.4018/978-1-59904-881-9.ch037 // https://www.igi-global.com/chapter/digital-literacy-research/16708, 08.09.2019.

[9] D. Martinovic (2015) Social Aspects of Digital Literacy. Encyclopedia of Information Science and Technology, Third Edition. IGI Global, DOI: 10.4018/978-1-4666-5888-2.ch209, https://www.igi-global.com/chapter/social-aspects-of-digital-literacy/112625

[10] E. Avni (2016) Digital Competence: A Net of Literacies. Handbook of Research on Technology Tools for Real-World Skill Development. IGI Global, DOI: 10.4018/978-1-4666-9441-5.ch002, https://www.igi-global.com/chapter/digital-competence/139680

[11] E. Peña (2018). Visualizing Visual Literacy. 10.14288/1.0368982.

[12] F. Martin, A. Spalter, O. Friesen, J. Gibson (2019). An approach to developing Digital Visual Literacy (DVL).

[13] J. A. Delello (2016) New Visual Literacies and Competencies for Education and the Workplace. Handbook of Research on the Societal Impact of Digital Media. IGI Global, DOI: 10.4018/978-1-4666-8310-5.ch006 https://www.igi-global.com/chapter/new-visual-literacies-and-competencies-for-education-and-the-workplace/136670

[14] J. Ewing (2017) The Power of Metaphor in Bringing Clarity for Learners in Learner-Centered Design. Handbook of Research on Learner-Centered Pedagogy in Teacher Education and Professional Development. IGI Global, DOI: 10.4018/978-1-5225-0892-2.ch015, https://www.igi-global.com/chapter/the-power-of-metaphor-in-bringing-clarity-for-learners-in-learner-centered-design/163498

[15] J. Munday (2017) Showing a Human and Professional Face to the World: An ePortfolio Design Strategy for a Sense of Self. Handbook of Research on Humanizing the Distance Learning Experience. IGI Global. DOI: 10.4018/978-1-5225-0968-4.ch005, https://www.igi-global.com/chapter/showing-a-human-and-professional-face-to-the-world/171317

[16] I. M. Mahajan (2016) Media Literacy Organizations. Handbook of Research on Media Literacy in the Digital Age. IGI Global, DOI: 10.4018/978-1-4666-9667-9.ch011, https://www.igi-global.com/chapter/media-literacy-organizations/141702

[17] L. D. Hoffman (2011) Integrating Digital Photography into Adult Education. Encyclopedia of Information Communication Technologies and Adult Education Integration

[18] L. Lacy (1987). An Interdisciplinary Approach for Students K-12 Using Visuals of All Kinds. In R.A. Braden, D.G. Beauchamp and L.W. Miller (Eds.) 1987: Visible & Viable. The Role of Images in Instruction and Communication. East Texas State University. Commerce. Texas.

[19] M. C. Flannery (2015) Science of the Archives: Visual Learning about Plants. Handbook of Research on Maximizing Cognitive Learning through Knowledge Visualization. IGI Global, DOI: 10.4018/978-1-4666-8142-2.ch007, https://www.igi-global.com/chapter/science-of-the-archives/127480

[20] M. Frank (2008) Active Learning and Its Implementation for Teaching. Encyclopedia of Information Technology Curriculum Integration, IGI Global, https://www.igi-global.com/chapter/active-learning-its-implementation-teaching/16672

[21] M. Ranieri (2018) Digital and Media Literacy in Teacher Education: Preparing Undergraduate Teachers Through an Academic Program on Digital Storytelling. Handbook of Research on Media Literacy in Higher Education Environments. IGI Global, DOI: 10.4018/978-1-5225-4059-5.ch006, https://www.igi-global.com/chapter/digital-and-media-literacy-in-teacher-education/203994

[22] M.R Simonson, Maurer, M., Montag-Torardi, M. & Whitaker, M. (1987). Development of a standardized test of computer literacy and a computer anxiety index. Journal of Educational Computing Research, 3, 2, 231-247

[23] M. Spalter, A. van Dam (2008). Digital Visual Literacy. Theory Into Practice. 47. 93-101. 10.1080/00405840801992256.

[24] O. Duchak (2014). Visual Literacy in Educational Practice. Czech-Polish Historical and Pedagogical Journal. 6. 10.2478/cphpj-2014-0017.

[25] R. A. Braden, J. A. Hortin (1982). Identifying the theoretical foundations of visual literacy. Journal of Visual Verbal Languaging. 2(2), 37-51.

[26] R. Pettersson (1994). Visual Literacy. The International Encyclopedia of EducationEdition: 2nd EditionChapter: Visual LiteracyPublisher: Pergamon Press.

[27] S. Hewett (2009) Using Video Games to Improve Literacy Levels of Males. Handbook of Research on New Media Literacy at the K-12 Level: Issues and Challenges. IGI Global, DOI: 10.4018/978-1-60566-120-9.ch018, https://www.igi-global.com/chapter/using-video-games-improve-literacy/35920

[28] S. Lesley, J. Farmer (2015) Information Architecture and the Comic Arts: Knowledge Structure and Access. IGI Global, DOI: 10.4018/978-1-4666-7409-7.ch013, https://www.igi-global.com/chapter/information-architecture-and-the-comic-arts/120341

[29] What is Visual Literacy. IGI Global. // https://www.igi-global.com/dictionary/digital-literacy-research/31927

[30] U. Dur, Banu İnanç. (2018). THE RELATION BETWEEN INFOGRAPHIC AND VISUAL LITERACY.IGI Global, DOI: 10.4018/978-1-61692-906-0.ch036. https://www.igi-global.com/chapter/integrating-digital-photography-into-adult/46598, 08.09.2019.

[31] P. M. Barroso (2020) Visual Literacy and Visual Rhetoric: Images of Ideology Between the Seen and the Unseen in Advertising. New Media and Visual Communication in Social Networks. IGI Global, DOI: 10.4018/978-1-7998-1041-4.ch002, https://www.igi-global.com/chapter/visual-literacy-and-visual-rhetoric/236551

[32] R. Aviram, Eshet-Alkalai, Y. Towards a theory of digital literacy: three scenarios for the next steps. // European Journal of Open Distance E-Learning. 2006, 23.01.2013, http://www.eurodl.org/materials/contrib/2006/Aharon_Aviram.htm

[33] R. Pettersson (2013). Views on Visual Literacy. VASA Journal on Images and Culture (VJIC). http://vjic.org/

[34] R. Heinich, Molenda, M., & Rusell, J. D. (1982). Instructional media and the new technologies of instruction. New York: John Wiley and Sons.

[35] R. Sinatra (1986). Visual Literacy Connections to Thinking, Reading and Writing. Springfield. Illinois, Charles C. Thomas.

[36] S. Kumar (2014) Information Literacy Support for Online Students in Higher Education. Handbook of Research on Transnational Higher Education. IGI Global, DOI: 10.4018/978-1-4666-4458-8.ch031, https://www.igi-global.com/chapter/information-literacy-support-online-students/78141

[37] Spalter, A & Tenneson. D (2006). The Graphics Teaching Tool. SIGGRAPH 2006.