

## Some thoughts on visual literacy education

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### Introduction

The importance of visual information (and with it that of visual literacy) can be illustrated by the following anecdote about the famous conductor, Arturo Toscanini. On a rehearsal, he was trying to explain how he required the orchestra to play a particular passage from Debussy's *La Mer*, but was unable to explain it properly with words. Instead of a verbal explanation then, he tossed his silk handkerchief high into the air. Seeing its graceful descent, the orchestra understood what the maestro wanted to tell them (Stokes, 2002).

Data visualization has existed in certain forms for centuries. Its systematic development with the use of bar charts and line graphs is credited to William Playfair (1786), a Scottish engineer and political economist (Womack, 2014). Today, data visualization has become a pervasive part of our information-intensive society (Fontichiaro, Oehrli, & Lennex, 2017). This extent of digital transformation is also associated with the proliferation of information resources, and with the increasing importance of the image as a mode of knowledge representation (Matusiak et al., 2019).

Such facts in themselves would substantiate the claim that giving attention to visual literacy is a timely subject, but with the growing importance of data used in scholarly research, the public institutions and our private life underlines this need stronger than ever.

### The nature of visual literacy

Although of interest for many professionals and often addressed in higher education (Renfro, 2017), visual literacy is relevant to K-12 education (Hobbs, 2006). It is one member of the new literacies family that evolved to meet the requirements and effectively exploit the potentials, resulting from the development and pervasiveness of new, digital technologies (Leu et al, 2004).

In general, visual literacy competences are essential for successful participation in today's media-rich academic environment. Nevertheless, visual literacy is not limited to modern technologies and mass media. All the same, images

may become culturally even more influential than verbal communication, not only because some information may be better presented visually than verbally, but thanks to the wide availability and relatively low price of images (ACRL, 2011).

The term *visual literacy* was coined in 1969 by *John Debes* (Debes, 1969). Also known as *digital visual literacy* or *visual fluency* and (more colloquially) *visuacy*, it can be defined as “the ability to recognize and critically appreciate meaning in visual content and to use visual elements to create effective communication” (EDUCAUSE, 2015). By referring to competencies in using and interpreting still images, photography, film, video, and mass media, its early understanding often overlapped with media literacy and in many cases involved aesthetic appreciation, without discussing the creation or manipulation of images (Matusiak et al., 2019).

According to a more detailed definition of this interdisciplinary concept, visual literacy is:

“a set of abilities that enables an individual to effectively find, interpret, evaluate, use, and create images and visual media. Visual literacy skills equip a learner to understand and analyse the contextual, cultural, ethical, aesthetic, intellectual, and technical components involved in the production and use of visual materials. A visually literate individual is both a critical consumer of visual media and a competent contributor to a body of shared knowledge and culture” (ACRL, 2011).

Visual literacy focuses on the aesthetic and rhetorical functions of images, “examining how people make connections between the visual texts they encounter and their own experience of reality, examining media texts for their plausibility and correspondence with other media representations” (Hobbs, 2006, p. 22).

Both our experiences of the world and the ways of fulfilling our needs substantially depend on what we see and this visual perception is one of our earliest capabilities, which supersedes the first learning experience, that is tactile perception. It is also recognised that virtually any image can be analysed as a semiotic object that has direct, indirect, concrete, and abstract meanings (Emanuel, & Challons-Lipton, 2013). This is the reason for giving attention to virtual literacy that also concerns any combination of body language, motion, dance, works of art, photographs, films and videos, museum exhibits, advertisements, illustrated written or verbal discourse, architecture, hypermedia, and visual reality experiences (Chauvin, 2003). Its cohesive theory involves visual perception, visual language, visual learning, visual thinking, and visual communication (Avgerinou, & Pettersson, 2011).

On top of our inherited human qualities, technological advances brought visual images to the forefront. In general, without possessing visual literacy skills, we would be deprived of the ability to better understand culture, critique and communicate, and contribute to it (Emanuel, & Challons-Lipton, 2013).

It is well known that no single, isolated technique is likely to bring about sense-making and higher-order thinking, which leads to understanding. Nonetheless, visualization is often claimed to be a powerful aid to achieve it (Bawden, & Robinson, 2016).

It seems to be clear that, similarly to information literacy, visual literacy (VL) needs to change direction by giving less attention to “a functionalist, technological, skills-based and product-oriented approach. It should focus on a “situated, ecological, context- and process-oriented approach that embraces higher-order thinking and empowers students as knowledgeable critical information users (Corrall, 2017, p. 39.) From the “visual literacy side” Benoit (2016) also underlined this.

### *Visual literacy and other literacies*

Visual literacy has been present since the 18th century, but gained momentum with the emergence of digital technologies (Avgerinou, 2009) and the attention towards visual literacy was heightened when the meaning of being literate in the 21st century began to change (ACRL, 2011).

In contrast to other literacies, visual literacy is primarily centred on the process of accessing, reading, and using texts. From a different point of view, alongside media literacy, visual literacy gives considerable attention to popular culture, while information literacy (in accordance with its name) focuses primarily on informational messages (Hobbs, 2006). This latter disjunction seems to be on its way of disappearing, because the views of seeing information literacy are on the way to become more inclusive.

On this account, visual literacy is much more closely related to information literacy than ever, as its most up-to-date definition says that it is “the ability to think critically and make balanced judgements about any information we find and use” (CILIP, 2018). This definition underlines that information literacy incorporates critical thinking, thus is associated with and overlaps with media literacy: it also makes clear that it relates to information in all its forms, including images and data.

This latter quality has its root in recognising that the convergence among different forms of media and ICTs (Livingstone, van Couvering, & Thumin, 2008) makes the boundaries between diverse media and varied literacies fluid.

This latter quality of information literacy is in conformity with the idea that visualisation is central to managing different kinds of data (Ridsdale et al., 2015) as data visualisation allows us to discover the structure and patterns in datasets: it also maps series of data to a space (Abilock et al., 2017). Therefore, visual literacy is a resource that can be integrated into data literacy, defined as a specific skill set and knowledge base, which empowers individuals to transform data into information and into actionable knowledge by enabling them to access, interpret, critically assess, manage, and ethically use data (Koltay, 2015).

### *Visual literacy competences*

Besides critical thinking skills and meaning making, characterising practically in all new literacies, visual literacy includes the following knowledge, abilities, and skills:

- The familiarity with basic components of visual language, such as point, line, shape, form, space, texture, light, colour and motion;
- The knowledge of the socially agreed meanings of signs and symbols;
- The ability to turn information into pictures, graphics, or other forms that help communicate the information;
- The ability to think coherently and logically primarily by means of images;
- The ability to perceive differences between two or more visual stimuli;
- The ability to reconstruct partially occluded visual messages in their original form (Avgerinou, 2009).

Several visual literacy competencies are listed also in the ACRL Visual Literacy Competency Standards for Higher Education (ACRL, 2011). This document focuses on the VL of students, who are able to critically view, use, and produce visual content, because they have developed essential skills and abilities in order to engage capably in a visually-oriented society, even though the pervasiveness of images and visual media does not necessarily mean that individuals are equipped with these qualities. Containing seven standards, broken down into performance indicators, which also indicate learning outcomes, it may be used in its entirety or in part. This document also states that as aesthetic and creative objects, images often function as information, but require additional interpretation and analysis, because finding visual materials is different from searching in text-based environments.

### *Graphic representations of visual literacy*

Graphic representations (visual depictions) of data and information include blueprints, caricatures, cartoons, charts, diagrams, drawings, flowcharts, graphs, maps, paintings, photographs, storyboard graphics, videos, mind maps and concept maps (Metros, 2008).

Visual techniques, such as mind mapping can support cognitive processes such as thinking, problem solving, idea generation, categorisation, representation, vocabulary exploration, (Fourie, 2011). Mind mapping can help students identify and solidify the relationships of material stemming from different classes (Renfro, 2017).

Concept mapping can also be helpful, because concept maps foster individuals' ability to remember information, including its relationship to other concepts and facts. They have been successfully implemented in the education for science, technology and medicine (STEM) subjects, as well as language and history education (Schwendimann, 2015).

Another and growingly popular form of depiction is infographics (information graphics). Infographics can play a role in literacy education and are part of visual literacy as they visually represent information, data or knowledge. Infographics are produced with the intention to present information quickly and clearly, and are being used more frequently and in more places. Constructing infographics encourages students' creativity in selecting a topic, strategically and visually organizing and sharing it with a public audience. Infographics present information or data in an easily accessible and concise manner to help a viewer understand a phenomenon. Creating infographics requires students to make sense of multiple data sources and synthesise data into a compelling visual form to make a central claim. Unlike posters, which tend to be purely informational with disjointed facts, infographics have an overarching message (Weidler-Lewis, Lamb, & Polman, 2018).

### **Visual literacy education**

Visual media is ever-present in our world, and prevalent access to digital technology, mentioned above means increased access to images. Nonetheless, sheer exposure to ubiquitous visual content does not generate visual literacy in itself. Neither is it acquired a just because students are able to take photos, find images, or post visual contents to online spaces. In addition to this, the related skills – similarly to information literacy – do not automatically translate into

the abilities of critical thinking (Brown, Bussert, Hattwig, & Medaille, 2013). Exposure only does not result in visual literacy in the case of “digital natives”. Despite popular arguments positing children who grew up with digital technology—have strong digital skills and prefer images over text, their visual literacy is inadequate (Brumberger, 2011).

Visual literacy focuses on intentional communication in an instructional context and it is a cognitive ability that also draws on the affective domain (Avgerinou, 2009).

By emphasizing representation, visual literacy is not tool-centred. It emphasises skills instead (Haanstra, & Wagner, 2018), so in this regard it is similar to media literacy (Tyner, 1998). As it focuses on intentional communication in an instructional context, most visual literacy skills do not come naturally. In other words, visual literacy skills, pertaining to reading, decoding and interpreting visual statements, as well as to writing and encoding are learnable, teachable, and capable of development and improvement (Brumberger, 2011). Therefore, visual literacy is often viewed as a component of general literacy that is essential to an individual’s critical thinking and intellectual capacity (Avgerinou, & Pettersson, 2011). On the other hand, it is not generally recognized to be fundamental to formal education to the same unanimity as textual literacy is considered (Metros, 2008).

Teaching visual literacy can be based on its various aspects, including the importance of “understanding the cultural context within which an image was made and in which it is being viewed” and “understanding the use of compositional elements and the creation of images” (Lopatovska et al, 2013, p. 1198).

It seems to be self-explanatory that enabling the acquisition of critical thinking skills and meaning making are obligatory learning goals. Nonetheless, there are other important components of them:

- The basic components of visual language, such as point, line, shape, form, space, texture, light, colour and motion;
- The ways and tools of turning information into pictures, graphics;
- The perception of differences between visual stimuli;
- The reconstruction the meaning of incomplete visual messages (Avgerinou, 2009).

Besides meaning making, representation is also a central object of visual literacy. Therefore, research on visual literacy has given attention to the need of learning how people process visual texts as if they were genuine experience. The teaching of visual literacy also has emphasized the distinction between pictures and reality (Hobbs, 2006).

Visual literacy education is typically a collaborative endeavour that not only helps people express themselves visually, but is also aimed at establishing visual environments for guided learning (Avgerinou, 2009). Visual literacy addresses such issues as the role of selecting, framing, composing in influencing viewers' interpretations and emotional responses. It is directed towards explaining the comprehension and interpretation of images, the interactions between language and images in the meaning making process (Hobbs, 2006).

If we compare these issues to Bloom's taxonomy of learning, it becomes clear that visual literacy operates on a continuum that consists of varied types of engagement, i.e. recognizing, understanding, applying, analysing, evaluating and creating. However, the process is different from verbal (textual) literacy, because it does not always begin with recognition and understanding. The reason for this is that images may be evaluated and interpreted before someone is able to name them or if this recognition is missing (Emanuel, & Chalons-Lipton, 2013).

Evaluation is crucial. To evaluate a particular data visualization, we have to inspect its quality, accuracy, and reliability, not forgetting about the fact that "the power of the image will overwhelm the substantive content that it represents" (Womack, 2014, p. 14). When presented with data visualizations, users should establish not only the appropriateness of the visualization applied, but ask questions about its provenance, the reliability of the source, because if the underlying data is of poor quality, no visualisation can compensate for its weaknesses (Gray, 2004).

Visual literacy education should count with and capitalize on the individuals' learning style, defined by the differences between verbal and sequential task, directed by the left-hemisphere of the brain, and the visual-spatial and nonverbal activities that are predominantly under the control of the right-hemisphere (Stokes, 2012).

To cover the gap between the importance of visual literacy and its position in education, the European Network for Visual Literacy (ENViL) was founded in 2010. ENViL defines visual literacy "as a group of acquired competencies for the production and reception of images and objects as well as for the reflection on these processes" (Haanstra, & Wagner, 2018, p. 1). They state that visual literacy, connected to personal, social and methodological competencies is a domain-specific competency embedded in general education.

The Network elaborated the Common Framework of Reference for Visual Literacy (Wagner, & Schönau, 2016). It is a reference document with the aim of advising, without standardising. It can be consulted, when developing school curricula, teaching and learning materials and assignments for students.



It also enumerates the specific domains and situations in which visual literacy becomes apparent (Haanstra, & Wagner, 2018).

## Conclusion

This paper intended to offer a brief insight into pedagogical problems, related to visual literacy. Despite of differences, visual literacy is akin to information literacy and data literacy. Even though it is related to them, education of visual literacy could not only borrow methods from the educational practice of these two literacies, but should be aware of the features of visual literacy that distinguish it from other new literacies.

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## **Abstract**

This paper focuses on the nature of visual literacy by outlining its history, conceptual, and disciplinary background, putting emphasis on meaning making and representation. It explains visual literacy's relationship to other literacies and visualization techniques, such as mind mapping and concept mapping. Visual literacy is characterized also as an educational exercise.