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FROM DIGITAL LITERACY TO DATA LITERACY: HOW MUCH DIGITAL LITERACY DO WE NEED IN THE ART HISTORY CURRICULUM?

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ABSTRACT | This article is making an advocacy for including Digital Literacy into the traditional Art History curriculum and explains how it can be defined and what Digital Literacy could entail for the BA and MA curriculum.

KEYWORDS | Digital Literacy, Data Literacy, Art History Curriculum

Digital Literacy is a topic, which seems to be one of the central issues in times of the pandemic. Not neglecting these circumstances, I would like to discuss its meaning and impact on various levels of more fundamental importance and continuous developments, while having an eye particularly on the current needs in higher education.

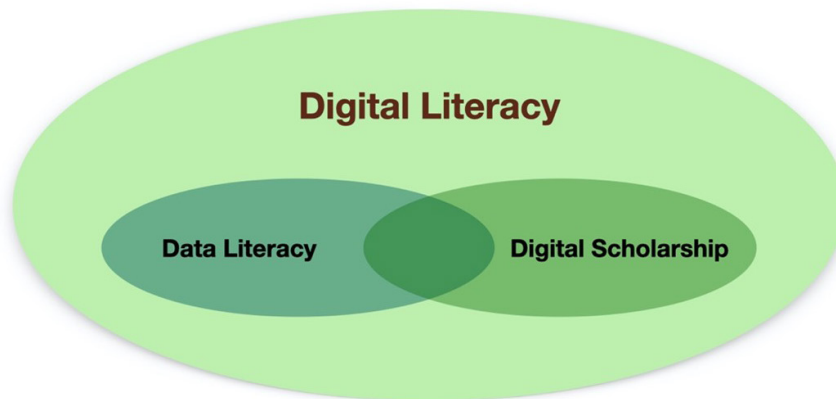
Digital Literacy – what are we talking about? The term was already born in the 1990s, and became established, when in 1997 Paul Gilster, a literary scholar, wrote a book entitled “Digital Literacy.” He basically wrote a guide on how to use the internet, based on the general concept of literacy, which he summarizes as follows: “The concept of literacy goes beyond simply being able to read; it has always meant the ability to read with meaning, and to understand.” Applying literacy to the digital environment he offers the following definitions: “Digital literacy – the ability to access networked computer resources and use them,” and “Digital Literacy is the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers.” A skillful and knowledgeable use of digital resources is still a prerequisite today, but writing in the 90s during the first big wave of information available on the internet, he departed from the problem that “the Internet seems intimidating,” he drew the clause that “the Internet will succeed only if it provides real value,” wherefore “the real challenge (would be) to rearrange our thinking.” He therefore included as a chapter of his book the content evaluation, Hypertext, searching the virtual library, and knowledge assembly.

Although the book content seems at first glance very generic, Gilster’s book is an important first approach to two key terms, which sums up the idea of Digital Literacy: the core competencies and critical thinking. He

writes: “Acquiring digital literacy for Internet use involves mastering a set of core competencies. The most essential of these is the ability to make informed judgements about what you find on-line, for unlike conventional media, much of the Net is unfiltered by editors and open to the contributions of all. This art of critical thinking governs how you use what you find on-line.” Thus, for Paul Gilster literacy means “the ability to use language in its written form,” while digital literacy means acquiring core competencies, to take advantage of the internet, which would however not lead to the supposition to necessarily learn computer languages and coding but mastering information. He writes: “Developing the habit of critical thinking and using network tools to reinforce it is the most significant of the network’s core competencies.”

Almost 25 years have passed since these initial thoughts on Digital Literacy, while the term has spread out from universities to schools and made its way into research and teaching. In 2012 Isto Huvila follows a similar road to Gilster’s and describes Digital Literacy as follows: “The notion of digital literacy is considered to be a general competence to cope with digitality and its consequences. It is another strategy that helps people to traverse their boundaries of knowing. Unlike information services, which are based on direct intervention, digital literacy helps people to see and cross their barriers by themselves.” Huvila sees “partly overlapping ideas of information services and digital literacy.” But when Huvila sees Digital Literacy as enriching the boundaries of knowledge (chapter 8), he does not explain how the added knowledge can be competently addressed. Likewise, Gilster had been very generic in describing his categories. Both Gilster and Huvila see the individual as the addressee of Digital Literacy and its competences. As Isto Huvila writes: “The central

Digital Literacy



difference between information services and digital literacy is that information services are about mediating meaning, whereas digital literacy is a meta-process of mediating the meaning of the mediation of meaning. They are approaches to help others to know more.” Mediating a meaning and ability to cope with digitality are in my view only tangential topics in this question, whereas I would agree with Gilster about the two fundamental aspects of critical thinking and core competencies.

The points of discussion are therefore two folded: What do we think, Digital Literacy means, and what do we think it entails? The question goes beyond researchers studying in Digital Art History or the Digital Humanities, but will rather sooner than later involve everyone, as a certain amount of information is only available in digital format. How can we access and use this information? And what does this mean for Art History?

Digital Literacy embraces both, Digital Scholarship and Data Literacy as two strands of practiced application. Both of these strands are specializations and have an overlapping area. Digital Scholarship often involves Data, and Data Literacy may embrace Digital Scholarship. But they also have distinguished separate parts, as Digital Scholarship is possible without a Data Literacy, and people involved in Data Literacy do not need to be scholars. But all of them need to have Digital Literacy to a good extent. Digital Scholarship is the practice and competence to use digital methods or digital tools. Data Literacy is about core stages of the digital research workflow: the acquisition, manipulation, analysis, and presentation of data. The term Data Literacy seems to be slightly younger than Digital Literacy, starting after 2000, while it became an important topic only in the second decade, and still limited to Anglo-American publications (which has changed significantly over the last three years!), whereas Research Data and “Forschungsdaten” is a topic since the sixties in either Anglo-American or German publications. With the growing importance of research data

and processing data, and subsequently involving research data management plans, publications on Data Literacy were steadily growing, albeit mostly from a data management or library perspective (combined with the demand for trained library staff to help with that), and lesser from a broader digital scholarship perspective. While the Data Librarian as a point of reference has been introduced in US libraries some ten to fifteen years ago, in Germany there is a similar evolution in big university libraries in the last five to ten years, resulting from the need to store research data, make it available and preserve it for the future. Here, big university servers play a fundamental role for researchers and their projects. Consequently, researchers are feeling the demand for a Data Literacy, which is needed to sketch projects and grant applications. Research data is a big topic in the natural sciences already since many years and dealing with these data is a key skill for scientists.

Over the past decade, the field of Art History has started to produce datasets that are readily available on the internet. Originally starting from museum catalogs, such as catalogs of photo collections, and through the ontologies provided by authorities in the field like the Getty Research Institute, the realm of art history data has expanded largely. For example, museums offer online catalogs with some filtered information regarding the art object, but they also offer more robust sets of data through live queries via an API or a SPARQL endpoint. The outcome is entirely different to a traditional museum or photo catalog, as it enables the user to pose computer-linguistically formatted research questions. These questions are considerably more complex than a simple query in a museum database. In addition, many individual researchers are producing research data with their topics. Nowadays, many master theses and dissertations gather data either manually or through harvesting methods, which thereafter need to be analyzed and demonstrated. And many graduate and post-graduate students work in funded projects, where data is produced.

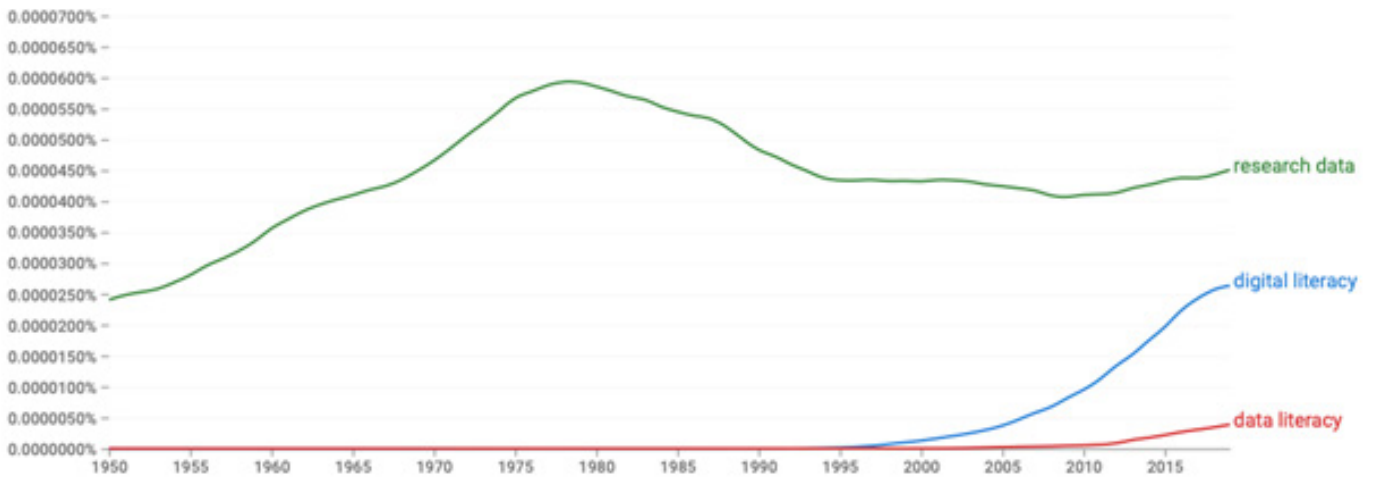


Figure 2. Google Books Ngram Viewer (parameters “1950-2019”, “English”, “research data”, digital literacy”, “data literacy”)

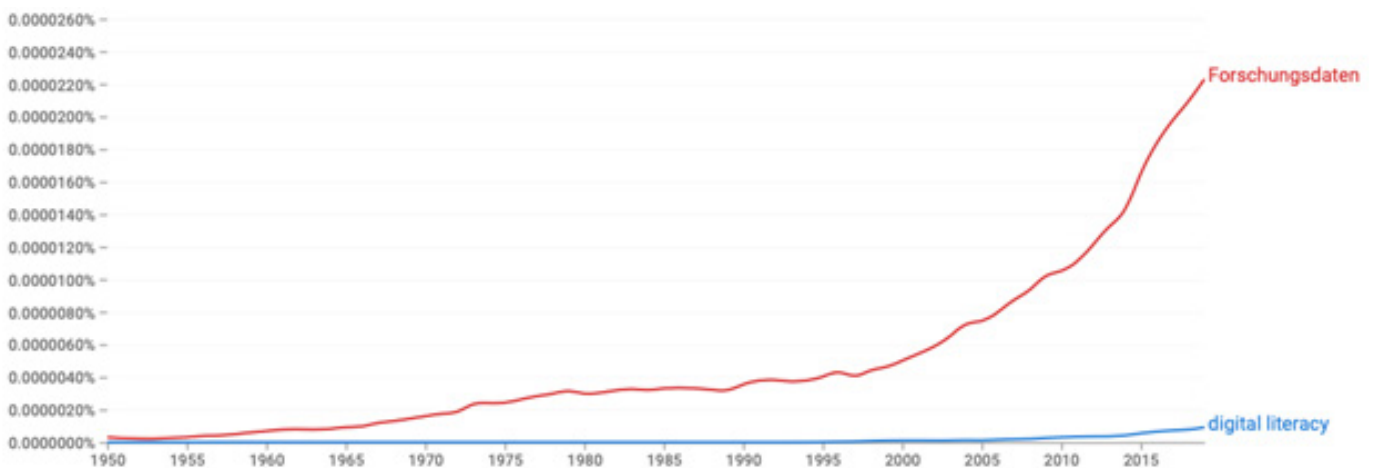


Figure 3. Google Books Ngram Viewer (parameters “1950-2019”, “German”, “Forschungsdaten”, digital literacy”, “data literacy” – the latter not producing results)

Art History has reached a stage where many traditionally working scholars are embarking on these new fields too, although they lack a preparation that most of us did not achieve in our years as students. Training in digital methods should be part of every university’s curriculum at the bachelor’s level. If “Digital Literacy for Art Historians” were regarded as a seminar topic, it would prove to be extremely helpful for every future Art Historian starting in any of the classic jobs, either at the university itself or at museums, galleries, publishing houses, or archives. There is demand for this topic; I have experienced it in many workshops and tutorials I have either organized or given myself over the past years. The university curriculum ought to be responsive to the need for Digital Literacy and should enable students to work with the data that their own field is producing. This requires competence in some digital methods. The question

is, what do we need in a university curriculum to establish a standard for Digital Literacy?

Returning to Gilster’s keywords, I would like to review his key terms with a more focused and updated light on the university student and the individual researcher. For Gilster, Digital Literacy meant mastering a set of core competencies, of which the most important was critical thinking and an act of cognition, which he described as different competencies, when using information from unevaluated sources on the internet. (This core competency applies to all internet access and use.) I propose separating critical thinking from the core competencies, setting the two as different entries. Rather turning Gilster’s definition around, I see critical thinking as the overarching ability, to which I would like to add core competencies on the technical level.

Digital Literacy

Critical thinking

- * Digital methods of scholarship
- * Art Historical Data Sources on the web
- * Digital Images
- * etc.

Core competencies

- * Data Literacy (querying, modelling, visualising, analysing)
- * Basics of Data Mapping
- * Basics of Digital Editing

The BA and MA curriculum

BA curriculum

Duty: Digital Literacy

MA curriculum

Free choice: digital reconstructions, computer vision, AI, etc.

Elaborating on Gilster's two-part foundation, Digital Literacy for Art Historians should therefore mean the following:

+ **critical thinking:** As already mentioned by Gilster, not every source on the internet is a valid source for data. Likewise, the available art historical data online are of different levels of quality. Where can I find Art Historical data in the Web? In the case of museum catalogs and photo collections, data have been inserted by professionals, who follow certain standards. These data are more and more part of the Semantic Web. What is the advantage of the Semantic Web, where normed data and ontologies play an important role? The issue is increasingly becoming important for GLAM institutions. Furthermore, I would anchor the topic of the digital image under this rubric of critical thinking. This would include what the defining factors are of a digital image, knowing image metadata and paradata, and the use of modern image viewers and interoperability across them, like the work done by the IIF consortium. Critical thinking also applies to the general use of digital methods and for the building and usage of digital projects. In the end, as an element of Digital Literacy, critical thinking touches on almost all aspects concerning art historical digital scholarship.

+ **core competencies:** Core competencies are methodological and technical skills needed to learn and advance in the field of Art History. As museum catalogs and photo collections belong to the core set of data in the subject, I regard it as a core competence to be able to review, assess, engage with, and make use of this object-based data. This means, having the knowledge and mastery to query data, model data for further uses, analyze and visualize data, and publish results in meaningful ways. There are plenty of tools available to do this and one does not need to turn into a computer scientist to do so. Learning these specific methods and technical skills enables scholarly research of

Art History's core data. Some familiarity with Data Literacy is certainly recommendable at this step, although it does not need to entail a level of fluency that would include Data Management Plans, which is left for those who are setting up projects. Additionally, some competencies in mapping data and digital editing are also useful and should belong to the core competencies to foster data use across disciplines and research projects.

In addressing how much Digital Literacy we need in Art History for scholarly research and the university curriculum, I would like to split up the topic in the well-known division of duty and free choice. Many of my colleagues working in Digital Art History may see this differently, but I regard Digital Literacy as belonging to the duty in a bachelor's study, whereas the free choice is leading towards more advanced skill development specific to field or method expertise, such as digital reconstructions, Computer Vision, and AI. This specialization may belong as an (optional) part to a Master's study or PhD program, similar to a language requirement.

Digital Literacy for Art Historians should be as fundamental to the field, as it is for hermeneutics and the terminology of architecture. Certainly, the student arrives at college or university with some understanding of digital literacy, and the single researcher, who decided to embark on a project involving data (which for many book projects comes as a side effect during the research), will eventually learn what is necessary. But some solid introduction to the topic is necessary for the curriculum. We should discuss, what this involves. We need to be able to deal with the data that come out of our own field, which is Art History and Cultural Heritage Studies! And we need to be able to critically evaluate data and related various manifestations and information that is involved. Therefore, a discussion concerning the university curriculum is deeply needed.

NOTES

- ¹ This paper has been presented at the conference: Digitale Erfahrungen und Strategien in der Kunstgeschichte nach einem Jahr Corona-Pandemie, organized by Verband Deutscher Kunsthistoriker, Ulmer Verein, Arbeitskreis Digitale Kunstgeschichte, March 26-27, 2021, Germany, online. For my co-presenter's contribution on Digital Literacy and its big impact on the meta level, looking at research infrastructure and institutional projects leading to Big Data, see his publications: Anne Helmreich, Matthew Lincoln, and Charles van den Heuvel, "Data Ecosystems and Futures of Art History," in: *Histoire de l'art*, no. 87 (June 29, 2021), pp. 45–54; Charles van den Heuvel, *Interacting with Big Historical Data of the Dutch Golden Age*, in: *New Technologies in Medieval and Renaissance Studies*, 2021 (forthcoming).
- ² Paul Gilster, *Digital Literacy*, New York 1997, p. 2.
- ³ Paul Gilster, *Digital Literacy*, New York 1997, p. 1.
- ⁴ Paul Gilster, *Digital Literacy*, New York 1997, p. X.
- ⁵ Paul Gilster, *Digital Literacy*, New York 1997, p. 2.
- ⁶ Paul Gilster, *Digital Literacy*, New York 1997, pp. 28-29, 33 (citation). Digital literacy is also an important point in children and public education, for example: Pier Cesare Rivoltella, *Digital literacy: tools and methodologies for information society / Hershey PA 2008*; Julia Gillen. *Digital literacies*, Abingdon, Oxon; New York, NY 2014.
- ⁷ Isto Huvila, *Information Services and Digital Literacy*, Oxford 2012, chapter 3.
- ⁸ Isto Huvila, *Information Services and Digital Literacy*, Oxford 2012, chapter 8.
- ⁹ See on the definition and meaning of Data Literacy: M Schield, *Information literacy, statistical literacy and data literacy*. *IASSIST Quarterly* 28. 2/3, 2004, pp. 6-11; J. Calzada Prado and M.A. Marzal, *Incorporating data literacy into information literacy programs: Core competencies and contents*, in: *Libri* 63.2, 2013, pp. 123-134 (adding also the ethical use of data); E.B. Mandiach and E.S. Gummer, *A systematic view of implementing data literacy in educator preparation*, in: *Educational Researcher*, 42.1, 2013, pp. 30-37; David Herzog, *Data literacy: a user's guide*, Thousand Oaks, CA 2016; Tibor Koltay, *Data literacy for researchers and data librarians*, in: *Journal of Librarianship and Information Science*, vol. 49.1, 2017, pp. 3-14.
- ¹⁰ See for example: Jake Carlson, Lisa R. Johnston, *Data Information Literacy: Librarians, Data, and the Education of a New Generation of Researchers*, Purdue University Press 2015; Tibor Koltay, *Data literacy for researchers and data librarians*, in: *Journal of Librarianship and Information Science*, vol. 49.1, 2017, pp. 3-14. See also my article Angela Dressen, *Open Access and Open Data – wo stehen wir?*, in: *Bibliothek, Forschung, Praxis*, 42.1, 2018, pp. 1-8.

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