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Digital Literacies as Socially Situated Pedagogical Processes: Genealogically Understanding Media, Information, and Digital Literacies

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Abstract

Despite the increasing importance of digital literacies for citizens to be able to participate in society, there is little scholarly agreement over what digital literacies entail. This conceptual ambiguity hinders the translation of digital literacies into educational programs and policies that foster citizens' digital literacies and inclusion. While various authors have attempted to define *digital* literacy separately and in relation to other concepts, such as *information* literacy and *media* literacy, little attention has been paid to the historical backdrop of these concepts. By tracing the historical development of three literacies (media-, information-, and digital literacy), we reflect on how societal demands shaped conceptual frameworks of these literacies and how these conceptualizations are situated within the broader pedagogical systems that aim to enable participation in digital societies. Using a genealogical approach, we explore and describe the changes in definition, understanding, and enactment of the three literacies, which illustrate how these concepts have developed towards the conceptual frameworks we employ today. Based on this analysis, we argue that digital literacies must be flexible to anticipate challenges that result from the rise of new technologies and need to be appropriated within different socio-cultural contexts. We pledge for an understanding of digital literacies as socially situated pedagogical processes aimed at the way citizens appropriate digital practices within their daily lives. This implies shifting away from formulating one-size-fits-all understandings based upon generic uses of digital technologies. Instead, we must appropriate the understandings of digital literacies based upon their socio-technical, cultural, political, economic, and material dimensions.

Keywords

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1. Introduction

In the past decades, media technologies have affected all aspects of everyday life. Life has become information- and technology-saturated, and citizens are increasingly expected to use digital platforms to participate in society. The rapidly changing technological landscape requires conceptual flexibility of related literacies. They must be capable of evolving along with societal, technological, democratic, and educational developments while at the same time remaining practically applicable by institutions, such as libraries, schools, and other practitioners. Over the last decades, "new" literacies have emerged while others dissolved or have been forgotten, and the ones becoming more relevant within digital societies have changed in definition, enactment, and understanding (Bruce, 1994).

Especially "digital literacy" has seen a fast rise in conceptual frameworks that seek to understand how citizens can be included in an ever-growing digital society. It is a key concept in debates about what skills and attitudes are necessary for citizens to participate in the knowledge society (van Laar et al., 2017) and is often used as an umbrella term for a myriad of other new literacies. However, there is no widespread consensus on how to define digital literacy. Such conceptual ambiguity complicates its use in practice and the development of adequate interventions, as both "digital" and "literacy" can be defined in many ways, depending on the context of use (Belshaw & Higgins, 2011). Moreover, although the term was coined in academic research, it is now also used by educational specialists, policymakers, and other interested parties, resulting in an abundance of different definitions in everyday practice. Subsequently, conceptualizations of digital literacy have further diverged in the past years.

This article analyses how the concept of digital literacy has evolved from 1970 to 2020 and how it relates to the preceding concepts of information- and media literacy. Tracing how these three concepts developed over time and indicating the key determining moments in their development helps explain their status within current academic and public discourse. Although various authors have attempted to define these concepts (Nichols & Stornaiuolo, 2019; Wuyckens et al., 2021), little attention has been paid to their historical backdrop. Based on an in-depth genealogical analysis rooted in a systematic literature review, we analyse the discursive genesis of media-, information-, and digital literacy. We show how technological and societal developments shaped their conceptualizations and how these are situated within broader pedagogical systems that aim to enable participation in digital societies. This supports the development of interventions aimed at fostering digital literacies, empowering citizens to appropriate new technologies and find their way in an ever-changing digital society.

First, this article gives a brief overview of current conceptualizations of the relations between media-, information-, and digital literacy. We then discuss the historical and societal developments around each of the key concepts, followed by a discussion where the three concepts are brought together to understand how they interrelate over time and how these developments led to current conceptualizations. Finally, we conclude by arguing for an understanding of digital literacies as personalized pedagogical processes aimed at the way citizens use, misuse, intertwine, and appropriate digital practices within their daily practices.

2. A Genealogical Approach to "New" Literacies

With the rise of digital societies and the influence of digitalisation upon democratic and civic processes throughout the world, a myriad of "new" literacies rose to attention. Of those, information, media, and digital

literacy are consistently and prominently used in popular and academic discourse and are broadly considered key literacies in educational paradigms (Koltay, 2011; Nichols & Stornaiuolo, 2019; Wuyckens et al., 2021). They thus capture the main developments within literacy education in relation to technological innovations since the 1970s. To understand how these concepts have developed over time, we adopt a genealogical approach (Saukko, 2003) that explores and describes the technological and societal context of changes in their definition, understanding, and enactment. This illustrates the literacies' histories and how these concepts have developed towards the conceptual frameworks we know and use today. To understand the rise of information, media, and digital literacies in relation to one another, we start by depicting the uses of these terms in (academic) literature. While not without limitations, the Google Ngram visualization tool allows for visualizing the broader uses and frequencies of the terms within digitized English-language publications (see Figure 1).

The Ngram shows a rise in the usage of the term "digital literacy" in the last decade, especially in comparison with the period 1970–1990 after which the use of media and information literacy took off. It is consistent with the broader rise of digital literacy in popular discourse, first relatively small in comparison with its theoretical predecessors, and eventually outpacing them. This reflects the technological developments in digital societies as well as how policies tried to keep up with them. Between 1990–2010, a growing understanding emerged that the shifting technological landscape was reconfiguring and reappropriating the demands and frameworks of traditional reading and writing skills and competences, translating these to a new digital era (Bawden, 2008). Multiple scholars argued that computers and digital technologies were facilitating a "post-typographic world" in which novel manners of educational programs and pedagogies were needed (Behrens, 1994; Bruce, 1994; Lupton, 2008).

Next to technological innovations, the evolution of digital literacy was impacted by institutional actors and policy. Between 1970–2010, institutional actors (e.g., UNESCO) prioritized information and media literacy as
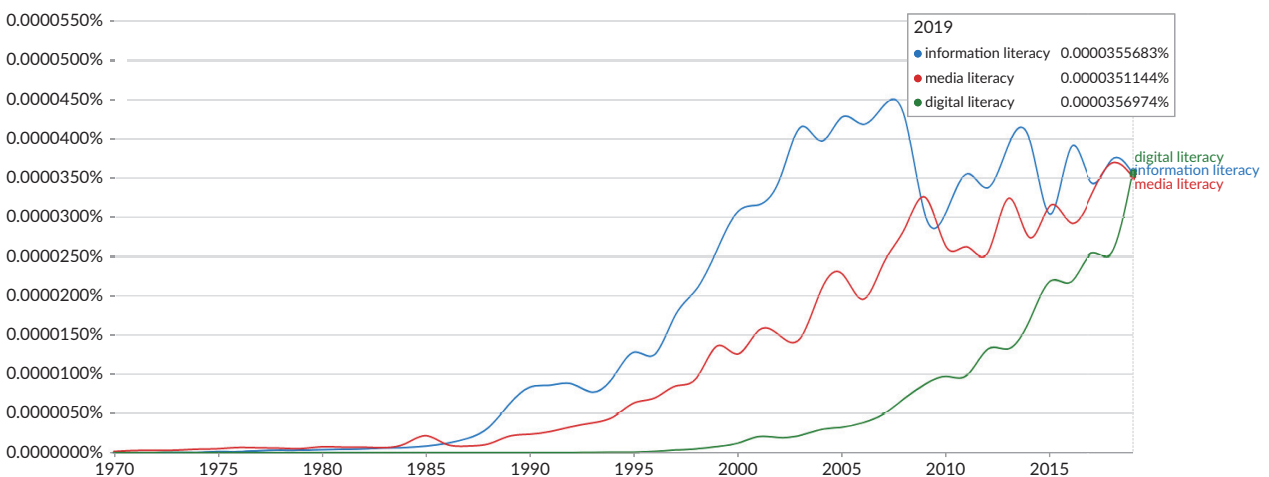

Figure 1. Ngram of digital, media, and information literacy in Google Books corpus (English, eight million books, 1970–2019). Ngrams are drawn from a text or speech corpus of more than eight million digitized books that shows how the frequency of a word or phrase changes over time; we understand the Google Ngram visualization tool as an instrument that provides an overview of the frequency and usage of terms within the Google search engine; the patterns should not be understood as reflective of all academic research, as Ngram is uncontrolled for bias, could potentially reflect skewed optical character recognition, and does not include metadata.

the key literacies within the notion of 21st-century skills facilitating the progression towards a digital society (Grizzle et al., 2014). For example, the UNESCO Global Framework for Literacy defines information and media literacy as follows:

> A set of competencies that empowers citizens to access, retrieve, understand, evaluate and use, create, as well as share information and media content in all formats, using various tools, in a critical, ethical and effective way, in order to participate and engage in personal, professional and societal activities (UNESCO, 2013, p. 17)

Digital literacy is not intertwined within this framework in the same manner as information and media literacy are (Carlsson, 2019). This shows how, initially, information and media literacy were prioritized.

However, from the 2010s, digital literacy gained more traction, bringing about novel competencies and conceptions of the digital. This can be understood as a precondition for the development of a unified literacy framework merging and translating components and competencies from multiple literacies (e.g., information, media, and digital literacies), to meet the needs and purposes of the future digital society. Drawing from this diachronic development, we refer to "digital literacies" in its plural form in relation to the contemporary understandings of digital pedagogies and the multidimensional underpinnings stemming from different literacy strands, and use "digital literacy" in its singular form to touch upon its historical unidimensional conception. In what follows, the genesis of each of the three literacies is analysed, focusing on their changing configurations and deployment throughout the years.

3. Method

Our research sample was compiled through a systematic search in Google Scholar on December 11th, 2020. Google Scholar is an academic search engine through which users can access a wide range of scholarly literature. To explore the most prominent literature in the field, we used the "most relevant" function. Google Scholar's ranking algorithm here uses citation count as the main factor, with papers that have been cited more often being ranked "more relevant" (Martín-Martín et al., 2015; Rovira et al., 2019), as well the appearance of the chosen search terms as keywords in the title (Beel & Gipp, 2009). We selected Google Scholar because, in contrast to commercial bibliographic databases, such as Web of Science and Scopus, it provides a free service that gives a broad audience access to scholarly knowledge with a total corpus of over 8 million texts (see Figure 1). This includes scientific articles as well as books, conference papers, handbooks, and other sources across scientific disciplines. Thus, the database reflects contributions and perspectives of academic discourse at large, allowing us to analyse the most prominent literature and dominant discourses in the field.

The search strings were "digital literacy," "information literacy," and "media literacy." Every search enquiry was sorted by "relevance" and restricted to consecutive five-year periods of publication to gain a broad understanding of the development of the concepts. There were no other restrictions placed. For every five years, the first five sources in the "most relevant" search results were examined. The five-year periods started in 1970 for information literacy and media literacy and in 1990 for digital literacy, as this concept was only coined in the 1990s. In the body of literature, there were two duplicate articles that had been republished. Furthermore, four sources had been removed and could not be accessed. The search strategies and the results of the search enquiries are presented in Figure 2.
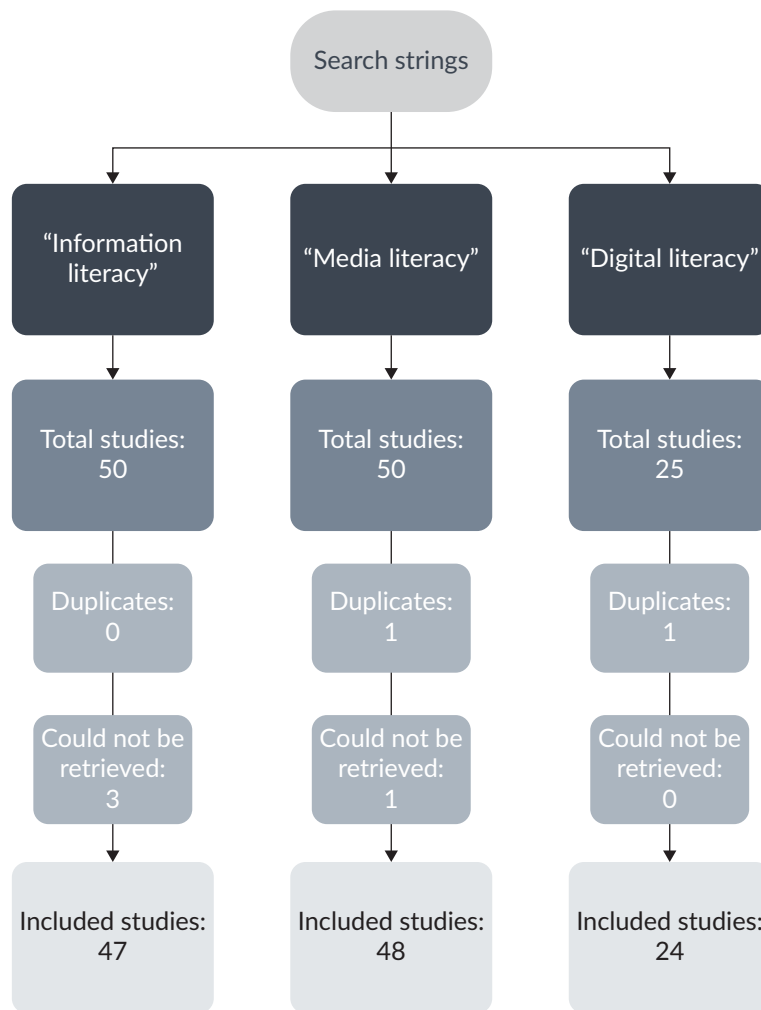
Figure 2. Flowchart of the selection process.

To analyse the documents in the selected corpus, we used a hybrid approach of inductive and deductive coding (Fereday & Muir-Cochrane, 2006). To do this, the authors first developed a code manual, consisting of five overarching categories determined by the research questions posed in this study. We analysed how definitions were used, the research field from which the source originated, if the source drew any relations with other types of literacies, which societal issues were addressed, and through which case these issues were examined. These coding categories ensured the authors answered the leading questions (see Table 1) developed to comparatively analyse the three concepts during specific periods of time. Within these five overarching code categories, the authors added new focused codes for all documents in the corpus. While

Table 1. Coding scheme.

Code	Leading question
"Definition"	How do conceptualizations develop over time?
"Research field"	How do research fields develop conceptualizations of the literacies?
"Relation"	How are conceptualizations related to other literacies?
"Case/example"	What is the social and temporal context of the conceptualization?
"Problem/argument"	What was the societal/technological need for this conceptualization?

each of the authors coded the literature regarding one concept individually, the coders had weekly meetings to ensure a coherent coding strategy. In the final step, a timeline was composed to reflect the significant developments of the researched concepts.

While Google Scholar provides an overview of the dominant discourses surrounding the three literacies, using it comes with several limitations. First, even though previous work has explored the ranking algorithm (Beel & Gipp, 2009; Martín-Martín et al., 2015; Rovira et al., 2019), it is not fully clear how it operates, and consequently, what texts may have been left out from its search results. Second, we used English search strings, thus our findings only incorporate English written texts and reflect a Western-centred approach to understanding the development of information, media, and digital literacy. Finally, selecting only the top five texts per time frame of five years could have skewed our interpretations of theoretical frameworks and understandings, leaving out other possible discourses that may have influenced the concepts over time.

4. Results

4.1. Information Literacy

First entering academic and professional discourse in the 1970s, information literacy is defined as a way of learning through engaging with and enacting information for various purposes (Bruce, 1994). The concept developed largely in the fields of library- and information science and became prominent in the 1980s and 1990s. It took shape in parallel with computer literacy, which was regarded as its predecessor and foundation. Information literacy, however, is less concerned with the use, control, or economics of computer technology than with the competencies required to make use of information in computer-based environments. Behrens (1994) emphasizes that information literacy bypassed purely technical concerns to focus on the production and organization of information itself, while recognizing that these demands were heavily inflected by the changing landscape of digital media (see Figure 3 for an overview of developments throughout the past five decades).

Zurkowski (1975) is credited with coining the term "information literacy" in his proposal to the US National Commission on Libraries and Information Science in the early 1970s. He advocated that the US Government should establish a national program aimed at achieving widespread, work-related, literacy practices. Initially, it primarily focused on providing technical skills, including information skills and instructions within—analogue and offline—library settings. These foremost focused on adults through a top-down approach and secondarily engaged students within higher education. At the end of the 1970s, moving towards the 1980s, this focus on finding and using information within professional contexts progressed towards the educational domain. The target audience shifted to a younger public, first specifically focusing on higher education students, and later, high school students and children (Eshpeter & Gray, 1989).

With the rise of digital technologies in the 1980s, progressively more information literacy frameworks became focused on digital practices. Data repositories and digital databases with related information services were brought to attention, whereas the focus began shifting from primarily individual information needs in the analogue and offline world to a more networked, connected, and digital society (Demo, 1986). It digressed from its traditional technical focus on searching and using information and moved towards a broader understanding of learning (Kuhlthau, 1987). In this period, the American Library Association, for
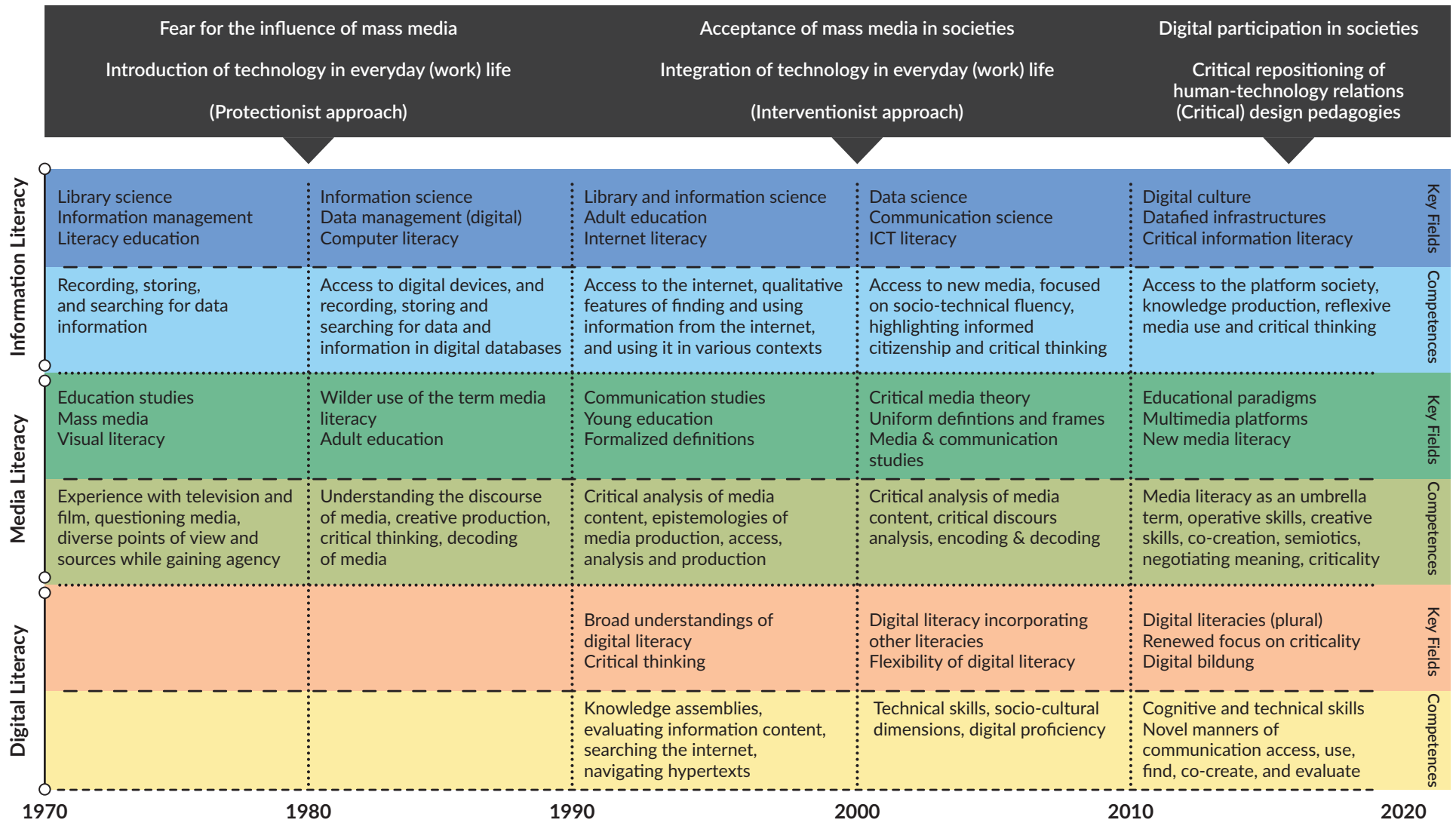
Figure 3. Literacy timeline.

example, defined the key components of information literacy as: (a) recognizing the need for information; (b) identifying what information would address a particular problem; (c) finding the information needed; (d) evaluating the information found; (e) organizing the information; and (f) using the information effectively in addressing the specific problem (Bruce, 1994).

When the internet and the World Wide Web came to the forefront in the 1990s, information literacy slowly transformed from a technical-skills based field towards a multi-dimensional mould. Bawden's (2008) survey of the field found more than a dozen information literacy definitions in circulation by the 1990s. Each definition diverged in specificity and emphasis, but a broad consensus remained that information literacy was concerned with assembling knowledge by retrieving, organizing, and evaluating information (Bawden, 2008). This contrasted with a societal perspective where computers and digital devices were not merely seen as technologies for professional and educational purposes but were particularly well suited for entertainment purposes. In the period 1990–2000, this duality of informing versus entertaining grew even more, resulting in more attention to the critical components of digital texts and information sources (Behrens, 1994).

In the 2000s, a plethora of information infrastructures and platforms emerged with the help of the internet, constructing new ways of communication, connectivity, connectedness, and community-building. A socio-technical and socio-cultural turn was seen within information literacy discourse throughout the 2010s (Bruce, 2003), when scholars increasingly focused on the everyday uses of information and media from an emic perspective (Lloyd, 2005). Within the last decade, information literacy progressively employed a bottom-up approach, centred around the users of information and their informational needs and norms.

Critical information literacy was at the forefront of this shift towards a more critical disposition of the role technology, information, and data have in societies, and ongoing debates about misinformation and personalisation (Tewell, 2015). This framework acknowledges and fosters the learner's agency in the educational process (Tewell, 2015). It is positioned as an addition to traditional instances of information literacy, whereas the attention is shifted towards discursive practices which focus on users developing proficiency with information through the seeking, interrogation, and evaluation of information sources and the appropriate and ethical use of information (Lloyd, 2005). It is a teaching perspective that does not focus on student acquisition of skills, as information literacy definitions and standards consistently do, and instead encourages a critical and discursive approach towards information practices. This also offers a more flexible and situated appropriation of information literacy, better suited to evolve alongside rapid technological innovations. This approach is key in the translation of information literacy towards digital literacy, as digital literacy embeds this critical approach towards broader affordances of digital media in different socio-technical and socio-cultural contexts.

4.2. Media Literacy

Opposed to information literacy, media literacy originates from a critical stance towards mass media. It is commonly described as a skill set that promotes critical engagement with messages produced by the media (Bulger & Davison, 2018). The development of the concept stems from concerns about the influence of mass media on individuals that originated in the period after World War I. Prevalent theories during this time include hypodermic needle theory and theories focusing on the effects of propaganda (Borah, 2016).

As television and film became more accessible in the 1970s, so grew concerns about the intrusion of mass media in the home (Houk & Bogart, 1974). Citizens were seen as passive consumers and receivers of information, as opposed to active, critical media users. Researchers argued that the development of media literacy was necessary to protect the public against the growing influence of mass media. Kirkton (1971, p. 831), for instance, stated that the media were "subtly influencing what we are and what we are in the process of becoming." In response to the concerns about mass media, the term "media literacy" was coined by educational studies (see Figure 3). The primary goal of media literacy was to understand how mass media controlled the public and how the public could take back control (Houk & Bogart, 1974). Although the concept of media literacy was mainly used in educational sciences, it has since been applied to and practiced by a diverse group of individuals including children, adults, and global citizens.

While researchers prioritized the development of media literacy as an important issue, there was little consensus about what skills citizens should have to be considered "media literate." Much of the literature from the 1970s and 1980s emphasizes the importance of the development of media literacy through top-down instruction, both in and outside the classroom (Forsdale & Forsdale, 1970; Levie, 1978; Levison, 1973; Lloyd-Kolkin & Tyner, 1988; O'Rourke, 1981). Literature on necessary skills can broadly be divided into two categories. The first focuses on the development of knowledge about the organization and production of media (Graham, 1989; Masley Kirkton, 1971; Messaris, 1998). This aspect was mostly approached through instruction (Graham, 1989) and by encouraging people to create their own content (Masley Kirkton, 1971). The other strand of media literacy skills is concerned with the ability to critically judge media content. Karl (1974) states that the goal of media literacy is to raise questions regarding the meaning of media content and how it affects human behaviour.

Although this critical aspect has been included in the development of media literacy since its beginning, it has been conceptualized in various ways. It was coined as "the ability to raise questions" and later transformed into critical viewing skills (O'Rourke, 1981), media grammar (Gumpert & Cathcart, 1983), producing a more critically aware citizenry (Graham, 1989), critical decoding (Brookfield, 1986), critical evaluation (Cortés, 1992), and ultimately, critical thinking (Buckingham, 1993). However, all strands have generally focused on the deconstruction of ideologies in mass media. During the second half of the 1990s, research on media literacy shifted from educational studies to media and communication studies. While the practical implications in classrooms were still being researched, theorizing media literacy became prevalent. This becomes clear from the report of the National Leadership Conference on Media Literacy in 1992. During this conference, researchers gathered to construct a "common vision, framework and understanding" of media literacy that each of them could use within their own niche (Aufderheide & Firestone, 1993, p. 6). They defined media literacy as "the ability to access, analyse and produce information for specific outcomes." This broad definition allows various media to be included within the framework and brings a strong sense of unity through various disciplines dealing with media literacy.

Although this definition of media literacy was used frequently in the 1990s and early 2000s as the main understanding of what media literacy is and should be (Hobbs & Frost, 2003; Livingstone, 2003, 2004), around 2010 scholars started to specify the various skills and attitudes needed to be considered media literate (Bulger & Davison, 2018; Pérez Tornero & Varis, 2010; Potter, 2016). Potter (2016) focuses on three broad aspects of media literacy: skills, knowledge structures, and personal locus. This approach leaves room for interpretation by various professionals concerned with media literacy, while also fostering a more fluid

and situated conception. Pérez Tornero and Varis (2010), in contrast, developed a set of specific competences (availability, environmental factors, use, critical understanding, and communication) and further divided these into sub-competences (operative, creative, communicative, semiotic, and cultural skills).

While definitions of media literacy differ between authors, there seems to be consensus on its goals. Authors stress the importance of taking control over the influence of mass media and the ability to participate in a society where media is omnipresent (Koltay, 2011; Lee et al., 2015; Pérez Tornero & Varis, 2010; Potter, 2016). More recent, however, is the growing importance of critical thinking within the concept. Researchers argued for a focus on critical thinking as this allows people to become active critics of media, and empowers and liberates them from the ideologies that are pushed upon them through media (Buckingham, 1993). While critical thinking in one form or another had been an aspect of media literacy since the 1970s, it got an even bigger role in later conceptualizations. In line with specifying the concept "media literacy" into "critical media literacy," concepts like "news (media) literacy" that specifically focus on intrinsic motivation, knowledge, and skills to consume news and "new media literacy" that stresses the influence of new media platforms have been developed (Lee et al., 2015; Maksl et al., 2015).

The introduction of new media platforms brought new possibilities and challenges to the development of media literacy. It has become easier to produce media and to participate through online platforms. Therefore, the creation of and active engagement with content have gained importance. As a result, the trustworthiness of information has become harder to determine as everyone can participate in publishing content (Bulger & Davison, 2018; Lee et al., 2015). Broad-based issues like recognizing misinformation have increased the importance of media literacy even more, and even though scholars have not yet reached a common definition, the need for media literacy is recognized now more than ever. However, this need is now often conceptualized as a need for "digital literacy."

4.3. Digital Literacy

With the introduction of the internet in the everyday lives of the public, the concept of digital literacy emerged. It was popularized by Paul Gilster in 1997 as the ability to understand, use, evaluate, and integrate digitized information (Gilster, 1997, as cited in Pool, 1997). Before Gilster, several authors used the term digital literacy in the 1990s. Among them is Lanham (as cited in Bawden, 2008), who referred to digital literacy as a type of multimedia literacy. He considered digital literacy to be quite different from traditional literacy because it can encompass diverse forms of information. Therefore, a new type of literacy had to be created (see Figure 3).

While Gilster stresses that digital literacy must be understood as a life skill as opposed to a collection of skills and competences, he distinguishes four key competencies, namely knowledge assembly, evaluating information, searching the internet, and navigating hypertext (Gilster, 1997; Martin & Grudziecki, 2006). In all these competencies, critical thinking skills are considered a core component. While other authors follow Gilster in his reasoning and employ the concept of digital literacy to describe the ability to recognize, interpret, and evaluate differing types of data, the majority of literature focuses on adequate use of digital and online sources (Gilster, 1997; cf. Bawden, 2008). While Gilster emphasizes that digital literacy is a life skill, not inherently tied to formal education, the late 1990s saw a predominant focus on education (Burke, 1999; Faigley, 1999; Labbo et al., 1998; Pool, 1997). The surge in the need for employees capable of gathering and analysing digital information furthermore led to the application of digital literacy in the

workplace. Labbo et al. (1998) present five key elements in this context: digital literacy (a) produces the ability for lifelong learning, (b) often occurs in pursuit of other goals, (c) occurs in a social context, (d) requires strategic competencies, and (e) requires critical knowledge of assembly and production (cf. Pianfetti, 2001).

Due to the scholarly enthusiasm for information literacy and media literacy, digital literacy received little attention in the late 1990s and early 2000s. Nevertheless, as accessibility of digital media grew, the interest in Gilster's conceptualization rose again. It was perceived as having considerable advantages as it could incorporate several different literacies, such as information- and ICT literacy, as well as being applicable to different personal situations. Furthermore, it was deemed a concept that could be easily developed and changed over time (Bawden, 2008). This line of reasoning is consistent with the views of Martin and Grudziecki (2006) and of Eshet-Alkalai (2004). The first comprehend digital literacy as "an element in the ongoing construction of individual identity" (Martin & Grudziecki, 2006, p. 265). Eshet-Alkalai (2004) proposes a broad concept of digital literacy, in which a range of cognitive, motor, sociological, and emotional skills are included. A different, but evenly broad conceptualization was established by the American Library Association in 2013, which defines digital literacy as "the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills" (Loewus, 2016).

Recently (2015–2020), there has been a renewed focus on the critical component of digital literacy in education. As a growing number of people are more comfortable with the basic technological skills of carrying out online searches, authors focus on how citizens develop skills to evaluate and use digital sources critically (Buckingham, 2010, 2015; Loewus, 2016). This suggests a rounded conception of digital literacy which is integrated in the development of a person. Related to the German term *Bildung*, this ongoing process refers to one's development as both an individual and as a member of a culture (Buckingham, 2010, 2015; Martin & Grudziecki, 2006). Søby (as cited in Martin & Grudziecki, 2006) uses the term "digital Bildung" to indicate "an integrated, holistic approach that enables reflection on the effects that ICT has on different aspects of human development: communicative competence, critical thinking skills, and enculturation processes, among others" (Martin & Grudziecki, 2006, p. 255). This holistic approach constructs a more flexible disposition, enabling an understanding of digital literacy better suited to tackle barriers arising from the proliferation and rapid advancement of digital technologies in relation to socio-cultural contexts.

In the last decade, terms such as "new literacies," "multiliteracies," and "21st-century literacies" emerged (Loewus, 2016). These new terms reflect changing and emerging technologies such as mobile phones and computer games, and skills such as sharing and creating videos online, and other new ways of communication. Researchers argue that educators should help students understand their experiences with digital media both inside and outside the classroom (Alvermann & Kaminski Sanders, 2019; Buckingham, 2010, 2015). Such a broad, critical, and personal understanding of digital literacy involves (a) the ability to recognize the construction of digital media, (b) an awareness of the ways media approach the public, and (c) an understanding of how the public handles and reacts to the media (Buckingham, 2015). This broad critical understanding of digital literacy is strongly related to the previously discussed concepts of information literacy and media literacy, where the measure and depth of criticality and a critical disposition towards the position of media in our societies is the primary point of departure for different approaches of media education and digital literacy pedagogies.

5. Discussion

While our analysis shows how information, media, and digital literacy all have different starting points, purposes, and components throughout their development, they also share multiple skills, competences, and perspectives. Over time, the three literacies moved closer together and partly converged, not only in the frequency by which these concepts are mentioned, but also in their understanding, enactment, and appropriation. Three approaches are extracted from this process, highlighting shifts in education, policy, and pedagogies. The first one is a protectionist approach, seen within all three literacies, which relates to mass media being present within the 1970s towards the 1980s. Driven by concerns about the intrusion of mass media in the home, it constructed media education from a protectionist point of view to protect citizens from the power of mass media. This progressed towards an interventionist approach within the 1990s into the new century when more personalized media came to the forefront, focusing on individuals' media use for leisure instead of in professional and educational domains. Moreover, it foregrounded users' agency in relation to media and technology. This in turn inspired critical (design) pedagogies in educational programs in 2010–2020, focusing on the maker-movement and design features. The argument that, by making and/or creating, a critical understanding within multiple layers of the digital could be learned and appropriated within personal contexts took a primary spot on the literacy stage.

Information literacy predominantly facilitates (top-down) technology-mediated pedagogies, while media literacy facilitates more (bottom-up) media-focused pedagogies. Digital literacy here could be positioned as a middle-ground, where the prioritized understanding entails that digital media are used to accomplish specific goals, for and by certain individuals, in diverse settings and situations. It is heterogeneous, more flexible, and inclusive. Moreover, digital literacy frameworks translated these features within broader civic and democratic concepts such as digital citizenship, digital exclusion, the digital divide, and digital inequalities, with critical thinking and empowerment as key shared components (Buckingham, 2015). Information and media literacy can be divided on a spectrum of determinism, ranging from technology- to socially-driven viewpoints. Within the context of media literacy, this means exploring how media messages are constructed by particular actors, while information literacy focuses on more technical proficiency within more technical and computational communicative processes. Digital literacy provides insight in both situations, though broadly not as critical as media literacy, and not as technical as information literacy.

Second, a key difference between the literacies stems from how they are applied and understood in practice. Information literacy is mostly applied and practiced as a discipline targeting older educated (Western) audiences with a broad spectrum of technical skills and competences. Media literacy is applied and practised by more diverse audiences (children, seniors, global citizens, etc.), meeting differentiated norms with and around media, and targeting a more general and reflexive disposition towards media in diverse societies. Digital literacy is applied in a more nuanced sense, more flexible, situated, and socially constructed, which allows its frameworks to be used for diverse audiences ranging from elementary school to seniors, from disadvantaged communities to more generic publics.

Finally, there is empirical evidence that media literacy can improve fundamental components of literacy education—such as reading and writing—while information literacy cannot, and rather draws upon them to develop information literacy (Bulger & Davison, 2018; Koltay, 2011). Without being able to read correctly, it is simply impossible to understand and apply information literacy and essentially become information literate

(Koltay, 2011). This difference stems from traditional disciplines and purposes from which the literacies are constructed. For example, information literacy inherits its technology-mediated pedagogies from library and information science, predominantly prioritizing the effective use of information for decision-making on an individual level, especially focusing on educating (adult) users of libraries on various information and documentary resources. It stresses the technological skills needed to use the library as a gateway to information. In comparison, media literacy focuses more on media in a collective sense, building upon mass media theories, media studies, and educational paradigms and a protectionist approach fearing the effects of media on societies at large. Digital literacy, finally, started as a broad, collective, interdisciplinary framework encompassing a broad spectrum of digital skills and competences necessary for the 21st-century digital age. However, later it developed into a more technical skills-based framework focused on individuals.

Across various perspectives, scholars have consistently pointed to media education as a potential strategy for stimulating people's engagement with varied media content and increased critical thinking in relation to novel socio-cultural and political norms posed by digital technologies (Buckingham, 2015; Eshet-Alkalai, 2004; Lloyd, 2005). Following this line of thought, it is notable, while also disputed by some scholarly paradigms, that digital literacy partially consumed information and media literacy. It translated and reframed core components such as information (content) retrieval, use, understanding, reflexivity, and criticality towards an understanding of the digital, where socio-cultural and socio-technical contexts largely affect how media are used and intertwined into the fabric of daily lives.

With each new medium comes a new need, a new skill set to learn, and a novel conceptualization of existing literacies to align them with the contemporary challenges posed by the digital society. Hence, digital literacies must be flexible to anticipate challenges that result from the rise of new technologies and to be appropriated within different socio-cultural contexts. However, while the development of new media technologies may have resulted in novel types of literacies, and have broadened definitions of more traditional ones, the goals and premises of these literacies have remained remarkably stable. While media platforms may be "new," cycles of concern about their threat to safety, culture, and well-being repeat across the decades.

6. Conclusion

Our genealogy of media-, information-, and digital literacy explores the boundaries of where one type of literacy begins and another ends. This genealogical approach enables us to perceive these three concepts in relation to one another and explore the focal points and paradigms on which either were built, and how this progressed over time. This contributes to existing literature reviews of the three concepts individually (Bawden, 2008; Behrens, 1994; Buckingham, 2015) and in parallel (Koltay, 2011; Nichols & Stornaiuolo, 2019; Wuyckens et al., 2021). Tracing the genealogy of information-, media-, and digital literacy, we recognize that literacies are not siloed entities, but instead overlap and impact each other in profound ways. This approach furthermore enables us to observe their progression over time. This longitudinal perspective is crucial for discerning trends, shifts, and emerging challenges. Finally, by scrutinizing diverse appropriations of the concepts while not prioritizing one over the other, following their lineage throughout the decades to understand how perspectives changed from a top-down towards a bottom-up contextualization, we showed the implications this shift had for the enactment of each concept in practice. As such, this study contextualizes existing understandings of the three concepts in relation to historical and societal discourses surrounding technologies and media and the disposition of citizens within technologically mediated societies.

We have shown that digital literacy is an interdisciplinary, socially constructed, and boundary-crossing concept that assembles critical components from information and media literacy and translates these towards the digital realm in the 21st century. Understanding and bridging the differences within the three literacies is crucial to illustrate how they can answer important questions regarding the power and politics of digital technologies in (future) societies. Despite their own epistemological foundations, they share many underlying commonalities that allow for relating the three literacy concepts to one another and improving them in light of their publics.

The emphasis in current understandings of the three concepts lies on empowerment, providing agency, critical capabilities, and skills to publics to co-create, design, make, and use technologies within their own socio-cultural contexts, resulting in authentic learning outcomes. As such, we suggest that digital literacy is not a natural successor to media- and information literacy, but has developed as a mixture of skills, components, competences, and understandings originating from them and their predecessors. As an assemblage, digital literacy can condition our modes of knowing and modes of being regarding the digital. It can bridge digital inequalities and foster digital inclusion within a more situated configuration of human–technology relations.

In future research, it would be valuable to move beyond Google Scholar's search recommendations and explore additional databases to compare their results. In addition, as our analysis entails a dominant Western approach, a multilingual research design would foster a more diverse understanding of the genealogies of literacies. This would enable the exploration of the cultural components and features of different literacies that may be neglected in Western contexts. Diverse media publics will consistently need to educate themselves and translate such new understandings into their personal enactment of digital literacies. Gaining insight into these processes of appropriating new understandings of technology could be valuable to realize future interventions for promoting digital literacies that will aid citizens in finding their way in an ever-growing digital society. It is important to study how our discursive understanding and appropriation of such literacies affect the way digital literacies are merged into daily practices and meet societal demands. In context, our analysis provides limited insights into how digital literacies contribute to participatory acts, as our findings illuminate the genealogical conceptualization of digital literacies rather than the outcomes they enable.

Building upon this study, we argue that digital literacies must be flexible to anticipate challenges that result from the rise of new technologies and to be appropriated within different socio-cultural contexts. We pledge for understanding digital literacies as personalized pedagogical processes aimed at the way citizens use, misuse, intertwine, and appropriate digital practices within their daily practices. This implies shifting away from conceptualisations based upon generic uses of digital technologies. Instead, understandings of digital literacies need to be appropriated based upon their multiple socio-technical, cultural, political, economic, and material dimensions, which can differ from person to person.

Conflict of Interests

The authors declare no conflict of interests.

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