Understanding Print and Digital Texts: Towards a Semiotically Integrated Didactic Approach

# ABSTRACT

Building upon a literature review, this contribution examines the relationship between paper and digital texts, highlighting the distinctive characteristics of both and their roles in teaching and learning processes. It also describes the results of research on how young readers engage with written and digital texts. The study reveals that readers of paper texts were introduced to reading by family members or their social circle, while those who prefer digital texts report having been less encouraged to read paper texts. Almost all the children emphasized the importance of decoding paper texts and reported discussing what they read with other interested readers. The research clearly indicates that schools need to expand the design of integrated reading spaces to encourage children to appreciate different types of texts and to enhance the various ways in which they are understood.

*Keywords: Paper text; Digital text; Multimodal text; Reading comprehension; Literacy; Critical reading*

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# INTRODUCTION

Recent studies highlight a decline in reading habits among young people, partly attributed to the increased time spent on digital devices. In some countries, such as Finland, there has been a return to the use of print books after findings showed that excessive screen use can distract students and reduce their ability to concentrate. Similarly, a decline in reading skills has been observed among students, with studies suggesting that reading on screens is less effective than reading on paper. These trends, however, emphasize the importance of promoting and integrating approaches that combine the best of both print and digital texts in educational processes (Kucirkova & Littleton, 2016) [1].

The relationship between print and digital texts in the educational field is often characterized by a form of mutual exclusion in teaching and learning processes. Prevailing educational practices tend to focus more on the alternating choice between one or the other when designing a teaching proposal, which must be consciously structured by the teacher. However, it is possible to envision a shift in perspective towards the integration of print and digital texts within the complex communicative and informational landscape available to educators—one that can enhance learning by supporting the acquisition process. In this sense, the combination of print and digital texts in instructional design can serve as an additional approach capable of creating a connection between iconic, written, and media-based languages, making the synergy between page and screen (Kucirkova & Littleton, 2016; Singer Trakhman & Alexander, 2016; 2017; Singer Trakhman, Alexander, & Berkowitz, 2019) [1, 2, 3, 4], as well as between written texts and media (Caronia & Gherardi, 1991) [5], valuable tools for teachers to support learning processes and better respond to students' needs.

The different tools available to teachers often represent significant variables that become an integral part of instructional design, on which the success of teaching and learning processes—particularly those related to reading and text comprehension—may depend. It is therefore particularly important to establish a critical and reflective process regarding the methodologies adopted in educational settings, especially in relation to assessing the role of print books within their specific context of application (Cardarello, 2004) [6] and their use within integrated teaching strategies.

Traditionally, reading has been understood as a "situated process," occurring within specific spatial and temporal contexts. In the educational setting, the issue of the reading environment is particularly relevant, drawing attention to the importance of spaces designed for reading, its ritual aspects, and its recognizability within precise spatial-temporal and behavioural coordinates that can foster the development of a positive "attitude" toward texts and their comprehension. Specifically, space can significantly influence reading activities, even in situations of contextual variability. In this regard, the ability to recognize and integrate all the elements that can enhance the comprehension of both written and digital/media texts becomes essential (Sage et al., 2019; Halamish & Elisya Elbaz, 2020) [7, 8]. These latter elements, through specific devices, enable the creation of a "multi-sign" and "multimodal" framework within which the processes of text consumption and comprehension unfold, simultaneously referring to different dimensions (acoustic, auditory, and visual). These dimensions interact at various levels, also in relation to intra-textual and extra-textual factors, making available semiotic resources that constitute meaning-making systems fulfilling different functions in the processes of reading and comprehension (Petrová, 2022) [9]. This means that such relationships help structure experience and establish logical connections within texts, contributing to the creation and organization of different meanings. It involves conceiving an integrated approach between written and digital texts to propose new methodological perspectives focused on meaning comprehension—perspectives that should not be influenced by misleading or overly seductive representations but should instead be based on deliberate choices and strategies, which are re-semiotized through both multimodal and non-multimodal texts.

The core of this approach concerns intersemiotic didactic transposition through language (spoken and written), images (photographs, film clips, and graphics), and the symbolism of different types of texts (e.g., a photograph, a video, a graphic sign, etc.). These elements are applied within a semiotic domain that generates semantic and communicative expansions by utilizing various semiotic resources, ultimately enabling access to new meaning potentials.

1. **WRITTEN TEXTS AND DIGITAL TEXTS**

New media possess characteristics that allow for the engagement of broader bodily, perceptual, and cognitive areas compared to those involved in traditional reading. Through the use of auditory, visual, and tactile elements, they create a deeper connection between individuals and the tools themselves, which can function not only as instruments but also as environments or settings—frames and contexts that define the activity. It can be argued that media-based learning operates through immersive processes, enabling the simultaneous use of multiple senses, such as sight, hearing, and touch. This contrasts with monomodal learning (Rivoltella, 2013) [10], which primarily activates cognitive functions related to abstraction, relying on metacognitive processes and imagination through intentional and conscious activities. These activities involve deliberate and targeted attempts to control and modify the reader’s effort in decoding the text, understanding words, and constructing meaning (Afflerbach, Pearson, & Paris, 2017) [11].

In recent decades, there has been a gradual loss of the printed book’s "monopoly" as the sole source of learning, leading to its integration with other forms of communication and information. This shift in perspective has raised important questions about new forms of knowledge which, having evolved over time, have given rise to unprecedented ways of understanding that significantly impact cognitive, emotional-relational, social, and motor processes, as well as memory, imagination, and the development of new reasoning patterns. Through this immersive experience, individuals—particularly children—learn how technologies function in a direct manner, engaging in edutainment with new and effective teaching-learning methodologies.

In light of the above, the processes of reading and learning behaviors are also changing compared to the past, shifting towards transversal and flexible approaches. According to Paolo Ferri (2011) [12], the uniqueness of the "digital native" generation lies in their ability to handle cognitive overload caused by multitasking—that is, the ability to perform multiple tasks simultaneously, such as reading a textbook, listening to music, and interacting with peers on social media. This is because multitasking generations are accustomed to living in spaces "filled with technology," surrounded by computers, webcams, multimedia players, mobile phones, televisions, gaming platforms, etc. (Prensky, 2001; Rivoltella, 2006) [13, 14]. This generation uses new forms of thinking that proceed through a multi-perspective and multi-code discovery process inherent in the cultural object itself. These approaches involve forms of exploratory learning that gradually build more diverse tools and strategies for reading and comprehension. Digital natives, therefore, engage in learning through mistakes and exploration, rather than through a historical or logical-systematic approach, which aims at structuring information, not always interpretation, which requires digital awareness. Knowledge is no longer centered on static objects but on dynamic ones, allowing the transition from being readers to becoming active participants and constructors of learning.

From this interpretative perspective, reading reflects the characteristics of a contemporary society that can be defined as complex and fluid, dominated by transition, in which it becomes possible to experience multiple realities and different forms of reading. These shifts also lead to significant cognitive and emotional changes: first, there is a fragmentation of the self, which experiences a multiplicity of identities, often mutable and fragile, raising many questions; furthermore, hyper-communication brings to the forefront the need to share experiences and relationships in virtual groups, of short duration, created for specific occasions or experienced as communities of interest. These dimensions promote the construction of the identity framework for children, adolescents, and young adults, allowing them to experiment with new modes of self-directed learning that can be managed autonomously.

Thus, educational technologies can be understood as genuine tools and strategies for teaching and learning, representing expressions of ways of thinking and addressing problems inherent to the field of media knowledge. From this perspective, their educational use must be recalibrated within a logic of relevance and persistence, in alignment with specific learning objectives. In an attempt to explore the relationships between written and digital/media texts, examine the transformations in the individual's relationship with knowledge, and reflect on the global role that new media play in rethinking knowledge, literature highlights the amplification and externalization of many human intellectual and cognitive faculties, advocating for a new style of pedagogy that promotes both personalized and cooperative learning in online networks.

The innovative impact of new communication and information technologies increasingly involves the individual who uses them, helping to redefine the relationship between knowledge, school, and reality. This relationship can be enhanced by messages that can no longer be conceived as the exclusive domain of the visual element, linked to writing and printing, but are extended to all of the individual's senses, stimulated by new media. In this sense, and in line with the previous statement, it seems possible to propose the use of integrated texts in school reading as tools that function as true educational devices, offering a perspective of semantic continuity with the daily lives of children and adolescents, who are immersed in virtual reality.

1. **READING, TEACHING, AND DIDACTIC MEDIATION: THE ROLE OF READING LITERACY**

When we speak of a “text,” we refer to a set of correlated elements that form a logical-conceptual unit, which differs from a mere random collection of words due to the presence of communicative purposes—that is, essentially, of semantic constraints that convey communication with meaning. The text, understood as a fabric made up of interrelated parts, requires attention both to the content of the individual parts and to the connections between them in order to be understood. The subject who comprehends, actively engaging with the text, performs numerous mental operations, making comprehension a complex process with wide areas of unawareness and automatic processing, which can be either effective or ineffective (Colombo, 2002, p. 23) [15]. In this sense, the reader’s mind is tasked with numerous different functions, such as recognizing sounds, signs, and words, establishing the relationship between the signifier and the signified, recognizing propositions, the structure of the text, and the connections between its parts, through the use of inference (Nuzzaci, 2020) [16]. However, these operations can be considered necessary but not sufficient for reading comprehension, which involves the acquisition of higher-order skills that are activated whenever comprehension of the text is required (Cardarello & Contini, 2012) [17], as well as the use of more complex metacognitive processes that can be gradually achieved through the teacher’s instructional mediation. One need only think of literature in which poor readers are taught a range of metacognitive control strategies for the reading process to extract meaning from the text (noticing errors that may alter or cause a loss of meaning while reading, identifying the various components of a text—the main idea, causal and temporal connections, facts, etc.—constantly asking questions to monitor their own level of understanding, underlining the sections of the passage considered critical for comprehension, systematically activating prior knowledge on the topic to prepare the ground for understanding, and other strategies of lesser importance) (Cacciò, De Beni, & Pazzaglia, 1996; Cornoldi & Caponi, 1991; Ianes, 1996) [18, 19, 20]; or even that literature which focuses on recovering missing skills in schools, centering attention on the daily actions of the reader (Lumbelli, 2009; Benvenuto, Lastrucci, & Salerni, 2002) [21, 22], which includes mastering cognitive and metacognitive strategies that enable reading and understanding a written text, an aspect that becomes the conditio sine qua non for activating processes of knowledge construction (De Beni & Pazzaglia, 1995) [23].

In this way, the child can acquire reading literacy, which has been considered an important literacy goal by the OECD-PISA assessments since 2000, with intermediate updates. These explorations aimed to verify whether and to what extent fifteen-year-old students possess sufficiently solid reading competence to meet the demands not only of their current and future studies, but also of the life that awaits them outside of school. These studies continue to show that Italian fifteen-year-olds score below the OECD average in reading and comprehension, revealing critical factors, particularly significant for the Italian educational system, which has a historical delay in the ability to understand texts (Mullis et al., 2017) [24]. Reading literacy, as a complex dimension and a predictive factor for academic success and integration into the labor market, involves the ability to search for information explicitly contained in the text, the ability to infer, to make connections, to grasp meaning, and to evaluate the registers and communicative intentions (Colombo, 2002, p. 24) [15], also due to the variability that different linguistic structures offer to the reading and comprehension processes for identifying difficulties (Lucisano & Piemontese, 1986; 1988) [25, 26]. While it is true that current models of mediation involve the quality of teacher-student interaction, predicting students' literacy outcomes through their reading attitudes, it is equally true that the strength of this entire mediation process is moderated by the level of quality in the teacher-student interaction (Hu et al., 2018) [27]. In this direction, reading can be considered a tool for didactic mediation, which is characterized as a constructive, interactive, and active activity that requires the integration of new information, contained in the text, within the knowledge structures possessed by the reader (De Beni, Cisotto, & Caretti, 2002, p. 60) [28]. Therefore, it is possible to distinguish two components of reading: decoding and comprehension, which refer to different types of skills. The cognitive processes underlying the learning of reading and writing involve attention and concentration as indispensable elements for completing a cognitive task related to memory, relying on the emotional and motivational aspects associated with learning.

Didactic mediation should, therefore, aim to make the child aware of the comprehension process taking place during reading, by developing the necessary tools to ensure it is carried out effectively. Consequently, didactic mediation represents the synthesis between two elements: the text and the act of understanding, encouraging the student to recognize the characteristics of the text and to reconstruct the mental operations needed to comprehend it (De Beni, Cisotto, & Caretti, 2002) [28]. This mediation appears as a relational and operational mode aimed at interpreting and organizing the relationship between teaching and learning and intentionally directed at promoting educational goals.

1. **THE COGNITIVE PROCESSES ENHANCED BY THE USE OF NEW DIGITAL MEDIA**

The shift in focus towards the subject in formation, making it an active and creative agent of its own knowledge within the historical, social, and educational context, allows us to understand media and digital texts not only as a formative object but also as a tool that fosters the connection between formal, non-formal, and informal learning contexts (Marzano, Vegliante, & Iannotta, 2015) [29]. Reading within domestic contexts can differ significantly from reading that occurs within a specific school environment. This involves expanding its definition, also in relation to the role of multidimensional texts, particularly linked to technological developments. With the advent of new media education, a new pedagogical perspective is consolidating, aiming to redefine the very concept of citizenship, not only in terms of territorial extension—from local to global—but also in terms of participation of the individual in relation to themselves and others, in order to facilitate a shift towards awareness and responsibility.

The advent of digital media has, in fact, led to a reshaping of the communicative logic, paving the way for the construction of a multiscreen society, characterized by specific cognitive dimensions, concerning the individual perceptual dimension, "the dynamics of learning, and the logic of spatial localization of individuals engaged in social relationships" (Mingrino, 2010) [30].

The introduction of new digital technologies also allows for the combination of the different communicative, formative, and expressive potentials inherent in multimedia languages, which come to define themselves as true mediators of learning, that is, cognitive tools that stimulate and promote educational processes. First of all, it is possible to focus attention on the transition from a mono-sensory society to a multi-sensory society, which requires the development of new skills to decode the multiple communicative forms present. In fact, technological innovations bring about a change in the realm of the meanings attributed to signs, images, and texts. As Suppa (2019) [31] explains, summarizing Wästlund et al. (2008) [32]: "The networked nature of knowledge is therefore situated in a set of relationships and connections where technology becomes an integral part of the cognition system, and where digital technologies are simultaneously considered both means of consumption and production of information" (Suppa, 2019) [31].

We live, therefore, in a rapidly evolving world where the variety of texts is increasing, and people are using materials in new and increasingly complex ways. For this reason, literacy in reading evolves as society and culture themselves change. To adapt and respond to new demands and changing circumstances, it combines with the power of technology to create new knowledge and expand human capacity and productivity (Binkley et al., 2011) [33]. Although reading skills remain central, the emphasis on integrating information technologies into the social and working life of citizens requires updated and extended reading-related literacy processes that reflect comprehensive literacy tasks (Spiro et al., 2015) [34]. This requires a broader definition of reading literacy that encompasses both basic reading processes and higher-level digital reading skills, recognizing that what constitutes literacy will continue to change due to the influence of new technologies and evolving social contexts (Leu et al., 2007; 2015) [35, 36]. The nature of literacy today has become deictic (Leu, 2000a; 2000b) [37, 38]., meaning the definition of words whose meaning changes rapidly depending on the context, as we live in an era of rapidly changing information and communication technologies, each of which requires new literacies. It is, therefore, clear that the literate person of yesterday is not only different from that of today, but has transformed (Nuzzaci, 2020) [16] into a multiliterate individual, in a world pervaded by technologies (Google Docs, Skype, iMovie, Contribute, Basecamp, Dropbox, Facebook, Google, Foursquare, Chrome, mobile apps, etc.), where books are not necessarily static, and where digital/media texts are not inherently effective, as these alone do not guarantee literacy. This literacy, progressively transformed and enhanced by the introduction of increasingly sophisticated technologies, will initiate new processes of reading and writing, as well as new literacy and social practices that will meet the needs of future citizens. When we talk about new texts, for example, in relation to reading and understanding online, we must refer to at least five processing practices: identifying central problems, identifying relevant information, critically evaluating that information, synthesizing the information, and communicating it.

Within this repertoire lie the skills, strategies, and dispositions that are distinctive to online reading comprehension, as well as others that are also important for offline reading (Leu et al., 2007) [35]. This relates reading to other types of competence, such as digital literacy. The latter is one of the key competencies for lifelong learning, as it encompasses various components, including cognitive, ethical, and technological aspects.

In this cultural context, based on the synergy between technology and education, the emergence of a new system of competencies is observed, based on three levels: the first, the functional level, pertains to the skills and language typical of technologies; the second, the critical level, pertains to the analysis of meanings for the conscious production of cultural objects; the third, the creative level, relates to the processes of communication and expression of content (Rivoltella & Ferrari, 2010) [39].

In this perspective, information and communication technologies can enable the rethinking, representation, and personalization of learning if properly integrated into the educational setting. In this case, in fact, the practices of meaning construction are facilitated by the joint mediation of multiple devices that amplify communication channels and reduce the spatiotemporal distance, increasing the acquisition of an ever-growing amount of information.

Visual and auditory information, conveyed simultaneously, allow for the processing of a greater number of resources (Mason, 2018) [40] compared to the use of a single receptive channel, promoting deep multisensory immersion and the activation of a new process of adaptation to knowledge and learning (VanLehn, 2011) [41]. Digital text consists of any type of text placed on a digital medium and is, therefore, intangible and immaterial. This allows the reader to engage in a type of discontinuous, active, and interactive reading, which results in attention being globally dispersed and generalized. At the same time, digital text possesses affordances, meaning internal potentials that make it a suitable tool for the different levels of competence and reading skills of the individuals involved. In particular, it offers the possibility of using multiple languages and communication codes, as well as providing immediate feedback on one's learning, thereby influencing the cognitive processes employed in reading. The ability to adapt the layout of the text, for instance, for students with disabilities, and its integration with specific software for disorders such as autism and dyslexia, demonstrates how digital reading is a dynamic process that allows for the structuring of open solutions, taking into account the different characteristics and learning styles of students.

With the widespread use of digital devices, it has increasingly become evident that the discriminating factor cannot solely concern the organization of information, but rather the management of attention employed during the reading process. In fact, "many studies have suggested that the constant shifting of attention from one medium to another, a phenomenon labeled as 'continuous partial attention' […], can increase cognitive load and thus interfere with text comprehension" (Nardi, 2022, p. 14) [42].

While, on one hand, most scientific evidence has shown increased distractibility in relation to a higher cognitive load in digital reading, some recent studies, on the other hand, emphasize how habituation to media reading leads to an enhancement of the ability to select important information in a text (Liu, 2005) [43], at the expense of irrelevant information.

As Nardi (2022) [42] observes, research on the use of new reading devices for students with special educational needs has yielded significant results in areas such as dyslexia, visual attention deficits, motor deficits, and other learning difficulties, where tools for recognition and voice synthesis, as well as various types of digital texts, are often used to help the reader meet specific needs. In particular, a series of studies conducted on populations of students with autism spectrum disorders have shown how the use of iPods and iPads improves reading and text comprehension performance (Kagohara et al., 2013) [44]. Additionally, studies related to the reading comprehension and speed of dyslexic students in secondary schools have recorded differences between paper and digital reading. These results indicate that the use of digital supports, particularly the iPad (Kucirkova, 2017a) [45], significantly improves both skills (Schneps et al., 2019) [46].

Building on these studies, of which only a few examples are provided here, recent scientific literature has shifted the focus of neuroscience towards the assumption that cognitive processes are much more malleable than previously believed, thanks to brain plasticity, which allows for the reprogramming of certain neural areas with the aid of specific support tools. The development of the brain, based on the experiences individuals have within the different cultural contexts they are immersed in, enables the achievement of different modes of thinking. This is evident in the body of research that explores how digital natives develop different ways of thinking, such as the ability for hypertextual reasoning and transitioning from one content to another through various cross-references. It is in this sense that the formation of parallel and non-sequential cognitive structures has been hypothesized in individuals who regularly use new digital technologies from an early age (Prensky, 2001) [13].

Cognitive skills are enhanced by repeated exposure to digital media through the reading of visual images and representations of three-dimensional space (representational competence), the activation of multidimensional visuospatial skills, and evocative, imaginative, and creative abilities (such as imagining different plots, pathways, etc., or the various outcomes of events without necessarily carrying them out). These contribute to greater development of imagination, as well as the use of inductive reasoning, which involves observations and hypotheses that help understand the rules of a dynamic representation. Additionally, there is the effective attention towards performance and quick responses to both expected and unexpected stimuli. In this sense, the new skills prompted by technology, such as parallel processing, graphic awareness, and multi-sensoriality, can be considered structuring and of significant educational value, which schools should integrate and develop.

1. **READING SKILLS BETWEEN PRINT AND DIGITAL TEXT: IMPLEMENTING ALPHABETIC PROCESSES**

It is well known that reading skills are necessary for personal, educational, and professional success and have changed compared to the past. With the ongoing transformations, the nature of literacy and reading have evolved, and along with that, the overall cultural framework. Reading literacy was the main area assessed during the first PISA cycle in 2000, which today appears completely revised, especially with the development of new tools to represent it. However, Italian fifteen-year-olds consistently score lower than the European average (OECD, 2018) [47], which makes it necessary to implement interventions in the field of education aimed at reducing the number of "poor readers" or "poor comprehenders," who face specific problems with comprehension (Bishop & Snowling, 2004; Cain & Oakhill, 2007) [48, 49] and who are now categories of individuals particularly focused on by European educational policies.

It is well known that digital writing affects a person's ability to decode graphic signs, allowing for changes in some connections within our perception systems. Fluent reading on a screen has the disadvantage of being more rushed and often leading to forgetting what was read. However, new technologies like the ebook, for example, are able to overcome such inconveniences through the use of electronic ink, which is perfectly comparable to that of text printed on paper and allows the reader to make annotations, citations, underlines, and comments. On the other hand, written text will always have specific characteristics that make it unique compared to digital formats, such as its shape, the pages to be manually turned, and its smell—features that allow the reader to establish a more intimate connection with it.

The digital format of the ebook, for example, compared to the paperback book, offers significant advantages to the reader, primarily in economic terms, with significantly lower prices due to the absence of printing costs and the reduction in distribution costs. It also presents features that make it didactically interesting from the perspective of introducing children to reading: it is possible to choose the font size for displaying the text, making it easier to read a passage or a story; to immediately search for words or phrases contained in the work, thereby facilitating the learning of new words and the explanation of the meaning of complex expressions; and to access greater personalization of the tool, by adding bookmarks that allow the creation of customized indexes. What makes the ebook unique in its kind are some typical features, such as the ability to highlight parts of the text with colors, to add notes and comments, and then to obtain an index of them; to flip through it like a paperback, turning pages, or by selecting the content from the index that one prefers to read, with significantly faster access compared to a traditional book. This is what makes the ebook unique. In this sense, the growing personalization of e-books, through the introduction not only of images but also of audio and video files, links that create paths within the text or lead to web pages or discussion forums with other readers, ensures multi-perspective didactic approaches. The meeting between the paperback book and the digital one, therefore, increasingly forms an intrinsic experience, which ends up being profoundly different from the past. The issue of personalizing reading and the paperback/digital text is particularly significant because it can also be understood as a relationship between the material and the immaterial. This represents a true means of facilitating the reading experience, extending its characteristics in terms of an amplified space where, for example, easy-to-use technological devices can store entire libraries within optimized learning times. These various factors can contribute to making the reading experience unique, individualizing contextual, material, and personal factors that might otherwise hinder the establishment of a distinctive relationship with reading. The relationship between print and digital texts stems from the very nature of the languages and media involved, which are primarily based on specific structures (Natalini & Orecchio, 2022) [50]. Their qualities are highlighted in the recursive use of concepts such as interaction, engagement, exploration, collaboration, etc.

The value of reading, however, transcends the material support being considered, leading us to believe that it is unproductive to draw a strict opposition between physical and digital texts. Digitizing a text becomes essential, especially for the democratization of culture and learning, allowing for additional research tools, but without ever reducing the concept of a book to a mere static repository of knowledge. In this sense, it is possible to embrace the innovations inherent in new technologies without discarding the printed book, but instead proposing a complex interaction between the two formats. These should be seen as complementary tools that serve learning and the development of specific and distinct cognitive functions, depending on the types of sensory channels used.

1. **AN EXPLORATORY STUDY ON THE READING EXPERIENCE OF PRIMARY SCHOOL STUDENTS**

In contemporary multimedia society, the reading experience of children has notably changed due to the introduction of devices and specific apps that accompany and sometimes replace traditional printed books. There is no doubt that primary schools worldwide, over the years, have worked to support diverse perspectives on the learning of reading in response to printed texts (Nicholson, 1993) [51], with varied approaches that have focused on the “real book” (Campbell, 1992) [52]. Most often, schools have relied on printed texts as the primary form of communication, as they have not always been able to manage the approach to reading with other types of texts. Available meta-analyses seem to highlight how readers are often more efficient and aware of their performance when reading from paper rather than screens (Clinton, 2019) [53]. With the increasing dominance of digital reading over printed reading, it has become crucial to understand the effects of the medium on reading comprehension. However, research shows that results are conflicting, making it difficult to draw conclusions (Delgado, 2018) [54], although some findings are interesting. Authors like Kress (2000) [55] have shown how the visual and iconic aspects have become central to texts used in literacy and to solving emerging reading problems in today’s society. The combination of words, movement, sound, and colour, particularly in the media context, has led to a revisiting of traditional concepts of children’s reading experiences by research. The reading of digital and multidimensional texts, which is so familiar to children in today’s society, is a factor to consider in literacy pathways, even in terms of their assessment (Bearne, 2003; 2005) [56, 57]. The importance of conducting exploratory research to investigate the reading experience over time lies in the fact that deeper forms of illiteracy are increasingly emerging, which concern the processes of understanding complex texts.

**6.1 Research**

Based on these considerations and recognizing the contribution of various semiotic modalities in the meaning-making process, a research study was conducted with the objective of understanding the reading experience of ten children (five girls and five boys) attending the fifth grade of primary schools in two Italian regions (Lazio and Sicily), aged between 10 and 11 years old. The selection of participants based on their age and grade level ensured specific conditions related to reading in a school context.

The research involved the use of a semi-structured interview technique to conduct an exploratory study, as described by Brinkmann (2018) [58]. The motivation for this choice was based on "convenience" and the need to gain further clarification regarding the differences in reading between print and digital texts, which remains an evolving field of research and often shows contrasting results (Delgado, 2018; Benvenuto, 2005; Blanchet & Gotman, 2000; Bailey, 1991) [54, 59, 60, 61].

The research employed interview technique. The interviews were conducted in a semi-structured format and were accompanied by a guide. This format helped the interviewers establish a trusting relationship with the children, as its flexibility allowed for more freedom in their responses and enabled the interviewers to better manage follow-up questions, balancing rigor with content. It also provided the opportunity to explore certain topics in depth, allow for clarifications, additional comments, and so on, which were useful in meeting the research objectives.

The interview covered several dimensions or topics that allowed the interviewers to show greater flexibility in their conduct in order to facilitate the interpersonal relationship with the children. This was achieved through clear communication, designed to bring out emotional values, the process aspects of reading, and specific needs.

The choice of this method, particularly suitable for gathering in-depth data, was also flexible and adaptable. It was applied in an initial exploration process to identify important aspects of the children's reading experience in relation to both paper and digital texts, and to develop hypotheses for a future, more extensive research. For data collection, semi-structured individual interviews were used, recorded, transcribed, and processed through content analysis. The interviews were conducted in a familiar setting and lasted approximately 60 minutes each.

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| **Esplored Dimensions** |
| Perceptions of print literacy in different contexts |
| Perceptions of digital reading literacy in different contexts |
| Definition of reading |
| Self-perception as a reader |
| Self-perceived reading competence |
| Printed reading vs. screen reading |
| Consumption of printed and digital texts |
| Reading of printed and digital texts in different contexts |
| Guided reading |
| Free/individual reading |
| Reading at home |
| Reading at school |

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| **Some Questions** |
| Do you like to read? If no, why... If yes, why? |
| Do you prefer reading printed texts or digital/online texts? Follow-up: Do you prefer reading a book or reading on the computer? |
| What does being able to read mean to you? Do you think you read well? |
| Do you think it’s important to be a reader? |
| Do you think it’s important to read? Follow-up: Do you think people should be able to read well? Why? |
| Do you ever talk to your friends and family about the texts you read? Do you prefer reading alone or with someone? |
| If you prefer reading with others, do you prefer printed texts or digital ones? |
| If your friends talked to you about what they have read, would you be curious? Why? |
| Do you think you’re a reader of printed books or digital books? |
| Is there something your parents or teachers have done to encourage your enjoyment of reading? Can you explain what? If yes, did they encourage you to read only printed books or also ebooks, for example? |
| The last things or books you read, did you read them in printed books or digital ones? Do you remember any of the first printed books you read? And on digital media? Which ones do you prefer? |
| Do your friends (or your best friend) like reading printed texts or digital ones? Why do you think they do/don’t? |
| Do you ever feel like reading a book or an online magazine? Do you prefer reading information or chatting on the internet? Why? |
| Do other members of your family talk about the things they read? |
| If your friends told you about an important printed book they read, would you go look for it? |
| What is there in printed reading that makes you or doesn't make you want to read? Is there any experience you remember that might have contributed to your passion/aversion for printed reading? What? |

To examine the interview data, a content analysis was conducted, where the researchers independently studied each interview to identify recurring central characteristics, which were then identified and discussed. The resulting list of characteristics was later used to re-examine each interview protocol and ensure it was broadly characteristic.

**6.2 Results**

Considering the research questions, the analysis of the interviews revealed several significant themes. The differences between children who identify as readers and those who do not are clear, and these were confirmed by a more in-depth examination of their interest in reading.

The profiles of the children who were classified as readers or non-readers, of written texts and digital texts, revealed unique characteristics in each child's experiences, but also a number of common elements within the three emerging groups: readers of written and digital texts, readers of digital texts, non-readers of written texts.

It emerges that readers of written texts regularly interact both at home with other family members and at school with peers or teachers, while readers of predominantly digital texts report sharing their reflections on readings broadly and rather indiscriminately. All the interviewed readers stated that they discuss what they read with other interested readers, especially within the family or with a close friend. Discussions about written texts seem to allow children to draw from the reading experiences of other members of their social circle, while those about digital texts enable them to conceive reading as part of their social life.

Telling stories or talking about characters and plots with another passionate reader has been an important element of the young readers' experiences. Three out of ten children precisely describe how the stories told by their mothers increased their interest in reading and gave them the opportunity to share some reflections with friends, teachers, and other family members. Readers of printed texts report that they were almost always introduced to reading by their mother, who read them books from a young age, or by relatives who passed on their love for reading and thus helped spark their interest in this activity. Francesco (a fictitious name) reports, for example: *“My mother used to talk about books and tell me fantastic stories... she would say: 'Try reading this and you’ll see... but she never said, 'read this thing on the internet*''. Alessandra (a fictitious name) shares that her aunt, her mother's sister, used to read her stories and novels that she herself had read at that age: “*My aunt, a great reader, talks to me about a book, this book, and I try to find it on the Internet*”.

A volte, qualcuno di loro, dichiara di condividere le storie lette con gli amici.

However, readers of printed texts extend this interaction to their peers, but the reference model that emerges is almost always within the family. Readers of predominantly digital texts, on the other hand, seem not to have been encouraged to read by family members or school, and they do not spend time talking about either printed books or digital books. They share texts of various kinds with their friends and prefer reading on a screen rather than on paper, because they get tired easily. 'My eyes hurt after a while,' says Alessio (a fictitious name).

Young readers report having learned from their family or other members of their social circle that reading printed texts can be an enjoyable, pleasant, and useful activity, while readers of digital texts state that they were never encouraged to read, and even when this happened sporadically, they still ended up preferring to read on a screen.

In this way, these initial interviews, of which a brief summary has been provided here, have certainly provided valuable insights into how children make sense of reading and their perceptions of themselves as 'readers.' It is particularly striking to note how almost all the children emphasized the importance of 'learned' reading and the need to decode different types of texts.

A central element is the fact that the type of text read seems to influence the way children define 'reading' itself and develop a positive or negative perception of printed or digital reading. Different texts are, however, always considered by the interviewed children as messages to decode. In reading digital texts, emphasis is placed on the need to better understand the messages, with printed texts being more difficult to comprehend, and it is highlighted that children tend to rely more on visual cues when approaching written texts.

Considering that the initial idea was that reading is becoming increasingly 'multimodal' (Singer Trakhman, Alexander, & Sun, 2022; Bearne, 2003; 2005; Carrington, 2005; Walsh, 2003) [62, 56, 57, 63, 64], it is noticeable that reading printed texts seems to tire children more (a concerning finding), significantly reducing the value of reading itself.

The results align with the literature (Ofsted, 2004) [65] that identifies how children perceive reading as a process through which they learn to read and become consumers of texts. However, since the type of text (printed or digital) also seemed to define the very concept of reading and the status of being a reader, this perception appears particularly important, as it can make children feel 'capable of reading different texts.' Those who perceived themselves negatively as readers did so mainly in relation to printed texts and the lack of encouragement to read.

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| --- |
| Differenze tra lettori di testi scritti e lettori di testi digitali e non lettori |
| **Tema** | **Lettori di Testi Scritti** | **Lettori di Testi Digitali** | **Non Lettori** |
| **Interazione Sociale** | Interagiscono regolarmente con familiari, coetanei e insegnanti riguardo alle letture. | Condividono riflessioni sulle letture in modo ampio e indifferenziato. | Non dedicano tempo a discutere né di libri cartacei né digitali. |
| **Discussione delle Letture** | Discutono ciò che leggono con altri lettori interessati, soprattutto in ambito familiare o con amici intimi. | Condividono testi di varia natura con gli amici, preferendo leggere su schermo. | Non partecipano a discussioni sulle letture. |
| **Influenza Familiare** | Sono stati introdotti alla lettura da familiari, spesso dalla madre o da parenti appassionati di lettura. | Non sono stati sollecitati alla lettura né dalla famiglia né dalla scuola. | Mancanza di incentivazione alla lettura da parte della famiglia. |
| **Percezione della Lettura** | Considerano la lettura come un'attività divertente, piacevole e utile, appresa attraverso l'interazione sociale. | Tendono a percepire la lettura su schermo come preferibile, anche se non incoraggiati. | Si percepiscono negativamente come lettori, riferendosi soprattutto ai testi scritti. |
| **Decodifica dei Testi** | Sottolineano l'importanza di decodificare i diversi tipi di testo, affidandosi agli spunti visivi per i testi scritti. | Enfatizzano la necessità di comprendere meglio i messaggi dei testi digitali. | Non esprimono particolare interesse per la decodifica dei testi. |

This summary highlights the various experiences and perceptions of children regarding reading, emphasizing the importance of family and social influences in promoting an interest in reading, both on paper and digital formats.

1. **CONCLUSIONS**

In conclusion, it is important for teachers and anyone involved in teaching reading to recognize that children need to identify themselves as readers, regardless of the type of text considered, and how different genres of texts can influence the perception children have of reading and themselves as readers. More attention should be paid to how these texts are used in the teaching of reading during the early years of life. At the same time, the findings highlighted how children at this age tend to rely more on visual cues when approaching written texts.

This highlights the need for teachers to expand the semantic scope of literacy beyond print texts to allow the use of multimodal texts, due to the growing prevalence of digital texts to which children are generally exposed, which involves a complex interaction of linguistic elements, visual images, graphics, and design elements.

If the reading experience of children using tablets (Delgado & Salmerón, 2022) [66] and other multimedia materials is seen as a fast, non-linear, more distracted, and "surface-level" experience compared to the deeper and more intimate immersion that occurs with print books, the latter is perceived as heavier and, at times, discouraging for the more vulnerable.

Therefore, although digital reading is not suited for long texts and often consists of titles that are practically devoid of text, relying instead on animated illustrations and sounds (Konnikova, 2014, p. 14) [67], it should be calibrated and appropriately integrated with print reading. When digital reading takes place, for example, on tablets, features such as AirPlan can be accessed, allowing the teacher to duplicate the screen, project it onto another device, and simultaneously share materials, documents, and multimedia content in real-time via the network.

The greatest continuity between print and digital reading occurs in interactive editorial models that see the print/digital combination as the physical/virtual relationship between page and reader, capable of creating new meanings by leveraging the different gestures of turning pages, touching, and recombining various parts. When these interaction characteristics are transferred onto different formats, print/digital, new potentials are gained, allowing the child a broader textual and narrative exploration, making the role of the reader, once left to fantasy and imagination, interactive and more complex.

Ensuring the use of a variety of texts and languages and the flexibility in integrating them, adapting them to the needs, motivations, and characteristics of the users, offers significant advantages to teaching, as it no longer forces the student into automatic reading but allows for the adoption of a critical and analytical attitude. The use of both print and digital texts in the classroom, along with their effective integration in terms of instructional design, helps the teacher guide the student toward a structural reading that allows for a deep understanding of the messages and their meaning. Being able to distinguish, recognize, name, analyze, extract meanings, reflect, and evaluate what is read means possessing the ability to critically understand and consciously decode messages, which involves acquiring reading competence, understood as the ability to decode and comprehend both print and digital/media texts. These texts have specific grammars that must be known, decoded, and interpreted, pointing to the need for an understanding of the rules governing their functioning. A competent subject is one who is capable of engaging with texts responsibly and critically, one who is able to make informed choices about what to read, selecting and choosing texts based on their informational needs. Critical reading ability (Cervetti et al., 2001; Walz, 2001; Painter, 1965; Wolf, King, & Huck, 1968) [68, 69, 70, 71] and the strategies associated with it (Rise, Cooper, & Warrine, 1999) [72] are defined as a deep understanding of the messages contained in texts, which goes beyond the surface representation. It is realized through an inquiry into the text being engaged with and is oriented toward understanding the meanings, namely the "what, how, why, and who." It focuses on the deliberate discovery of a relationship between the reader, the subject, and the writer through the analysis of the writer's use of devices (such as figurative language, images, etc.) aimed at revealing the author's intention (Cervetti et al., 2001) [68] and the subsequent effect on the reader's thoughts and emotions. "Critical reading" is, in fact, linked to "critical literacy," which shares common characteristics, though with important distinctions (Cervetti et al., 2001) [68], and providing students with appropriate types of texts for practice in critical reading activities will be beneficial for developing their critical reading skills. Teachers must be adequately prepared (Karadag, 2014; Kobayashi, 2007; Bosley, 2008) [73, 74, 75].

These findings have important implications for reading-related interventions, as promoting greater reflection on the role of reading in school can increase children's engagement with both print and digital texts, with significant implications for their motivation to read. Children's perceptions of the importance and value of reading can, in fact, influence their motivation to read. However, it has not yet been fully explained how children continue to perceive the value of reading over time.

Schools must, therefore, expand their ways of designing integrated reading spaces if they want to encourage children to appreciate texts of different kinds and to value the wide range of modes through which texts are constructed and understood. This aims to allow young people to become "good readers" or "good comprehenders" (Oakhill, 1984) [76] and then skilled users of both print and digital texts, capable of making inferences, answering questions correctly—both those related to information directly gleaned from the text and information derived from an inferential processing system. Personalized reading systems aim to provide children with a tailored set of reading experiences (Kucirkova, 2017b) [77, 78].

# DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

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