Sociology Study, May-June 2025, Vol. 15, No. 3, 103-110
doi: 10.17265/2159-5526/2025.03.001

Promoting AI Literacy in Contemporary Society. A Sociological Perspective

Danilo Boriati
International Telematic University Uninettuno, Rome, Italy

The pervasive diffusion of Artificial Intelligence (AI) technologies is reshaping how individuals, institutions, and societies access, process, and govern information. While AI promises increased efficiency and personalization across sectors—education, healthcare, work, and public administration—it also introduces new social inequalities linked to unequal capacities to understand, use, and critically engage with these systems. This article explores the sociological implications of digital literacy as a foundational competence for developing AI literacy. Drawing on a multidisciplinary framework, the paper examines how digital literacy, understood in its epistemic, ethical, and political dimensions, enables critical agency in algorithmically mediated environments. Through a structured analysis of current literature and policy perspectives, the article highlights the need for inclusive, situated, and interdisciplinary educational strategies that empower citizens to participate in AI-related decision-making processes. It concludes by proposing a reconceptualization of digital literacy as a civic infrastructure for algorithmic citizenship, grounded in equity, democratic engagement, and technological accountability.

Keywords: digital literacy, AI literacy, algorithmic citizenship, critical education, social inequality, digital inclusion

Introduction

The technological acceleration driven by Artificial Intelligence (AI) is profoundly reshaping the ways in which individuals, institutions, and communities interact with information, make decisions, and structure their daily lives.

Artificial Intelligence now constitutes a pervasive technology, capable of influencing fundamental domains such as education, labor, healthcare, communication, and public administration. However, its diffusion also generates new forms of inequality and vulnerability, linked to the differential capacity of social actors to understand, evaluate, and critically engage with such technologies (Hargittai, 2002; Bentivegna, 2009; van Deursen & van Dijk, 2011).

In this context, Digital Literacy "encompassing the ability to use and interact with digital technology, and […] AI, which offers the ability to understand and utilize advanced algorithms to process information intelligently, have become crucial elements in modern eductation" (Muawanah, Marini, & Sarifah, 2024, p. 1). So, Digital Literacy assumes in contemporary society a strategic role (Sá, Santos, Serpa, & Ferreira, 2021). In fact, it not only enables technical access to digital devices and platforms but also encompasses interpretative,

Danilo Boriati, Ph.D., Researcher, Faculty of Communication Sciences, International Telematic University Uninettuno, Rome, Italy.

ethical, and critical competences that are essential for conscious interaction with intelligent systems.

This article aims to analyze the relationship between Digital Literacy and Artificial Intelligence, emphasizing the sociological and educational implications of this connection and contributing to the international debate with a theoretically grounded and up-to-date perspective.

The article is structured into four sections. The first reconstructs the conceptual framework of Digital Literacy, tracing its theoretical evolution and highlighting its multidimensional complexity, particularly in light of educational and cultural inequalities. The second explores the relationship between Digital Literacy and AI literacy, showing how the former serves as an enabling condition for the latter, based on the competences and frameworks discussed by several contemporary scholars. The third section discusses the role of AI literacy in digital citizenship (Cuomo, Biagini, & Ranieri, 2022) and algorithmic governance processes, underscoring the need for inclusive and context-sensitive educational pathways. Finally, the conclusion offers an integrated reflection on agency, equity, and democratic participation, drawing attention to the educational and political implications of an expanded Digital Literacy that encompasses Artificial Intelligence.

The article adopts a sociological perspective oriented towards the critique of automation processes, the democratization of competences, and the enhancement of civic participation within the technological ecosystem. Recent literature on AI literacy (Ng, Leung, Chu, & Qiao, 2021; Pinski & Benlian, 2024) confirms that there can be no algorithmic citizenship without a robust digital literacy infrastructure. Technical skills, ethical awareness, and critical reflection must coexist within an integrated educational framework capable of empowering individuals to consciously negotiate with opaque and pervasively distributed technologies.

In light of the growing diffusion of generative models and the concerns related to transparency, reliability, and the social impact of Artificial Intelligence, it is essential to interrogate what competences are truly necessary for meaningful interaction with such tools. Who possesses these competences today? How are they distributed across the population? What are the risks of exclusion, manipulation, or inequality that lurk behind the apparent universality of intelligent technologies?

Starting from these questions, the article aims to contribute to the construction of a theoretical and political agenda for Artificial Intelligence education, grounded in cognitive justice, social inclusion, and collective responsibility.

The Role of Digital Literacy in Digital Society

Over the past two decades, the concept of Digital Literacy has progressively evolved from a merely instrumental view—centered on the acquisition of basic technical skills—to a more nuanced perspective that integrates cognitive, ethical, and critical dimensions. The term “literacy”, in fact, can be defined “as the mastery of simple and practical skills which bring a profound enrichment and transformation of human thinking capabilities […]. Technological innovations have transformed how learning is taking place and digital literacy has become one of the main competences in this era” (Reddy, Sharma, & Chaudhary, 2020, p. 81).

In this perspective, Digital Literacy can be defined as the set of skills, knowledge and abilities needed to use digital technologies effectively, safely and critically (Tinmaz, Lee, Fanea-Ivanovici, & Baber, 2022). Competence which is not limited to the ability to use digital tools, but also includes the ability to understand, evaluate and create digital content (Heitin, 2016), manages one’s online identity and actively participates in the

digital society[1]. As highlighted by Eshet (2004) and Livingstone (2004), Digital Literacy cannot be reduced to the mere ability to operate digital tools; rather, it encompasses a complex range of interpretive, communicative, and reflective skills that enable individuals to navigate increasingly complex, ambiguous, and dynamic digital environments (Eshet-Alkalai, 2012).

At the core of this redefinition lies the recognition that digital technologies are not neutral tools but socio-technical systems embedded with values, logics, and power structures. Consequently, being digitally literate also means being able to critically interrogate the platforms, data, and algorithms that structure access to information and shape social interactions. In this sense, Digital Literacy functions as a form of cultural agency, allowing individuals to exercise conscious control over technologies and the narratives they convey (Heitin, 2016).

In the context of Artificial Intelligence, this agency becomes even more significant. Interaction with AI-based systems demands cognitive and metacognitive competences that go beyond mere technical proficiency (van Deursen & van Dijk, 2009; 2010): It requires a set of digital skills (Helsper & Eynon, 2013), such as understanding algorithmic logic, recognizing dynamics of automation and personalization, and critically evaluating the reliability and transparency of automated decision-making processes (van Laar, van Deursen, van Dijk, & de Haan, 2017).

Digital Literacy, broadly conceived, thus includes epistemic components (understanding how technologies function), ethical dimensions (reflecting on the moral implications of technology use), and political capabilities (acting consciously within digitally governed environments). These dimensions translate into a form of critical digital citizenship, as emphasized by Njenga (2018), who stresses the importance of preparing citizens not only to use technologies but also to understand their societal impact and actively engage in their regulation.

Furthermore, Digital Literacy operates across different levels of competence. The first level concerns basic access and use of digital devices; the second involves interpretive and critical skills related to source evaluation, understanding information production and dissemination dynamics, and the conscious management of personal data. A more advanced third level encompasses the ability to understand and influence the design, development, and regulation of the technologies themselves, within a framework of democratic participation and social justice (Carretero, Vuorikari, & Punie, 2017).

These levels intersect with a transversal dimension of social inclusion. As numerous studies have shown (i.e. Wolff, Gooch, Montaner, Rashid, & Kortuem, 2016), lack of Digital Literacy can exacerbate social inequalities, generating new forms of digital exclusion (Boriati, 2025) that compound existing economic, cultural, and educational disparities. Promoting Digital Literacy, therefore, does not merely mean providing technical tools, but also creating educational and cultural environments that value diversity and empower vulnerable populations (Boriati & D'Ambrosio, 2025).

An additional crucial dimension is the intergenerational aspect. Digital competences are not evenly distributed across age groups, and older individuals—as well as some marginalized youth populations—often face disadvantages in accessing and using intelligent technologies. In this regard, Digital Literacy also becomes a tool for intergenerational equity, fostering inclusion and active participation in an increasingly digital society (D'Ambrosio & Boriati, 2023).

[1] The expression digital society here refers to all the meanings of contemporary society that have also been defined in literature with the expressions "network society" (Castells, 1996; 1997; 1998), "connective society" (Rainie & Wellman, 2012), and "platform society" (van Dijck, Poell, & de Waal, 2018).

Moreover, the affective and relational dimensions of Digital Literacy should not be overlooked. Technological interaction is never solely cognitive; it also involves emotional, identity-related, and relational aspects. Digital platforms—particularly conversational AI systems—tend to elicit affective engagement that can either strengthen or weaken users' critical capacity. Being digitally literate also means being able to recognize and manage these dynamics by developing emotional awareness in technological interactions.

A central domain in which Digital Literacy reveals its strategic value is that of public policy (Villa, 2021). The growing role of Artificial Intelligence in decision-making processes, both at the national and local levels, demands that citizens understand the functioning of algorithmic systems used for service delivery, public data management, and evidence-based policymaking. For this reason, in this context Digital Literacy becomes a form of civic literacy, essential for exercising democratic oversight over public automation and algorithmic governance (Barocas & Selbst, 2016).

Many recent educational policies, both at the European and international levels, explicitly recognize the importance of Digital Literacy as an enabling condition for digital inclusion and the development of 21st-century key competences. However, its implementation in school curricula, vocational training programs, and lifelong learning initiatives often remains fragmented and inconsistent, leaving considerable room for improvement. In particular, an integrated vision is still lacking: one that connects Digital Literacy with the development of so-called AI literacy, a body of knowledge and skills specifically oriented towards understanding and engaging with intelligent systems.

As emerging literature suggests (Pinski & Benlian, 2024), AI literacy can be conceived as an extension of Digital Literacy, capable of addressing the cognitive, ethical, and social challenges posed by Artificial Intelligence (Ghallab, 2019). It includes the ability to understand how an AI system works, what data it uses, what decisions it automates and with what consequences, as well as the ability to critically assess the reliability and fairness of its outputs. Digital Literacy, therefore, represents the enabling condition for the emergence of full competence in Artificial Intelligence interaction (Bawden, 2008).

AI literacy also entails a dimension of collective awareness, underscoring the importance of fostering forms of civic and deliberative intelligence capable of steering the development and use of Artificial Intelligence towards socially desirable goals (Dignum, 2019). In this sense, Digital Literacy is not merely a set of individual competences but a collective project, to be promoted through educational, cultural, and regulatory policies that support an equitable and inclusive transition to algorithmic society.

Finally, it must be emphasized that, to be truly effective, Digital Literacy must be situated; that is, it must account for the cultural, linguistic, economic, and relational contexts in which technologies are used. Digital practices are never abstract but are embedded in life histories, power relations, and material inequalities. A context-sensitive Digital Literacy can contribute not only to enhancing individuals' technical skills but also to transforming the conditions of their social participation (Selwyn, 2004).

In conclusion, the role of Digital Literacy in the age of Artificial Intelligence is twofold: on the one hand, it constitutes the indispensable foundation for accessing, understanding, and critically engaging with intelligent technologies; on the other, it represents a political and cultural horizon within which the possibility of building a more just, inclusive, and conscious society is at stake. Promoting it means not only investing in education but also rethinking the very foundations of citizenship in the digital era.

The Importance of Developing an AI Literacy

The growing impact of Artificial Intelligence on social, economic, and cultural life (Wang, 2019) makes it increasingly urgent to engage in a thorough reflection on the role of Digital Literacy as the foundation for what is known as AI literacy (Kong, Cheung, & Zhang, 2021). In literature, there exist different definitions of AI literacy for AI users: for example, Carolus, Augustin, Markus, and Wienrich (2023, p. 1) defined AI literacy as the "competencies needed to interact with AI technology in a self-determined and rational manner", while Cetindamar et al. (2022, p. 11) defined AI literacy as "a collection of technology, work, human-machine, and learning capabilities"; Laupichler, Aster, Schirch, and Raupach (2022, p. 1), finally, defined AI literacy as "the ability to understand, use, monitor, and critically reflect on AI applications without necessarily being able to develop AI models themselves".

As highlighted in the systematic review conducted by Pinski and Benlian (2024), the proliferation of AI-based technologies (Vaswani et al., 2017; Brynjolfsson, Li, & Raymond, 2023) has multiplied the challenges users face in terms of comprehension, critical use, and informed participation (Kandlhofer, Steinbauer, Hirschmugl-Gaisch, & Huber, 2016; Long & Magerko, 2020; Hermann, 2021; Nguyen, Sidorova, & Torres, 2022). So, AI literacy is not limited to technical proficiency; rather, it encompasses knowledge, skills, and ethical-social awareness that enable meaningful interaction, for AI users, with intelligent systems (Jain, Padmanabhan, Pavlou, & Raghu, 2021).

According to the authors, AI literacy can be structured along three main axes: the learning methods that promote it, its core components, and the effects it produces on users (Pinski & Benlian, 2024). This approach allows for moving beyond fragmented perspectives by integrating pedagogical, cognitive, and socio-political viewpoints. Within this framework, Digital Literacy serves as the enabling condition for the development of genuine AI-related competences, functioning as a cultural and cognitive infrastructure that supports the acquisition of more specific and advanced skills (Schuetz & Venkatesh, 2020).

Among the central components of AI literacy are the understanding of algorithmic models, the ability to assess the quality and fairness of the data used by intelligent systems, awareness of the social implications of automated decisions, and the skill to interact with these systems critically and responsibly (Pinski & Benlian, 2024; Long & Magerko, 2020). These competences must be accompanied by a reflective attitude, capable of questioning the ethical, epistemological, and political assumptions embedded in technologies.

In the educational field, Ng et al. (2021) emphasized the importance of integrating AI literacy into curricula starting from primary and secondary education. They propose a model based on four dimensions: knowing and understanding the fundamental concepts of Artificial Intelligence; using and applying tools appropriately; critically evaluating risks and impacts; creating new AI-based tools or solutions. Their analysis also highlights the need for a transdisciplinary and human-centered approach (Boriati & D'Ambrosio, 2025), capable of combining technical knowledge with ethical sensitivity and social awareness.

A key aspect of AI literacy concerns the relationship between automation and human agency. In a context where many decisions are delegated to algorithms, being able to understand and interrogate the criteria on which these decisions are based is crucial to safeguarding individual rights and freedoms. Digital Literacy, extended in this direction, thus becomes a form of algorithmic citizenship, enabling citizens to exercise democratic control over the technologies that govern them (Ng, Luo, Chan, & Chu, 2022).

Another significant element relates to inclusivity. The literature shows that AI-related competences are unevenly distributed, and that this gap risks reinforcing pre-existing socio-economic, cultural, and generational inequalities (Pinski & Benlian, 2024). In this context, AI literacy should be viewed as a collective project oriented towards cognitive justice and educational equity. It is essential to design educational pathways that address the diverse needs of social groups, avoiding scenarios in which access to Artificial Intelligence is reserved exclusively for technological or professional elites and when all citizens can "participating in the society" (Njenga, 2018, p. 2).

Finally, AI literacy must include a deep reflection on the ethical implications of Artificial Intelligence. As Long and Magerko (2020) stressed, there is a need to develop a critical capacity that enables individuals to recognize the risks associated with algorithmic bias, opacity in decision-making models, and automated surveillance (Zuboff, 2019). This entails not only a set of individual skills, but also the construction of a public culture capable of setting limits and guidelines for computational power.

In conclusion, the relationship between Digital Literacy and AI literacy is not merely functional: it is epistemologically and politically constitutive. One cannot be conceived without the other. In order to engage meaningfully with Artificial Intelligence, individuals must possess a deep understanding of the digital logics that form its infrastructure. Promoting AI literacy therefore means strengthening Digital Literacy in all its dimensions—cognitive, ethical, relational, and political—and creating the conditions for a critical and inclusive algorithmic citizenship.

Conclusions

The analysis presented in this article has highlighted how Digital Literacy today constitutes a key competence not only for digital inclusion but also for the understanding and critical use of Artificial Intelligence. In a context where Artificial Intelligence plays an increasingly central role in mediating social, cultural, and institutional processes, the ability to interact consciously with intelligent technologies emerges as a fundamental dimension of contemporary citizenship (Njenga, 2018; Boriati & D'Ambrosio, 2025).

The findings from the literature reviewed (i. e. Long & Magerko, 2020; Ng et al., 2021; Ng et al., 2022; Pinski & Benlian, 2024) clearly show that AI literacy cannot be separated from Digital Literacy, but must be built upon it, through educational pathways that integrate technical skills, ethical awareness, and critical reflection. This calls for a structural transformation of educational policies, which must go beyond the mere transmission of operational skills to support the development of individuals capable of understanding, negotiating, and shaping the technologies that permeate their lives.

Far from being the prerogative of specialists or developers, understanding Artificial Intelligence must be democratized, making it accessible to all citizens regardless of their socioeconomic background or educational level. In this regard, AI literacy also acquires a political significance: it involves providing tools for agency to individuals who might otherwise passively endure the effects of automation and algorithmic governance.

Inequalities in access to and use of Artificial Intelligence therefore require targeted action that recognizes the plurality of educational needs and cultural contexts. It is important to valuing informal learning environments—such as libraries, local communities, and civic spaces—as contexts for inclusive and participatory literacy.

Finally, the articulation between Digital Literacy and AI literacy raises profound questions about the future of citizenship. In a society where public and private decisions are increasingly influenced by automated

systems, it is essential to reaffirm the role of critical competences in the construction of a democratic culture. As emphasized in the article, literacy in Artificial Intelligence is not merely an educational challenge, but a broad social and cultural project.

In summary, promoting Digital Literacy and AI literacy means contributing to the development of citizens capable of actively and consciously participating in public life within an AI-mediated society. It is a challenge that requires the coordinated contribution of educational institutions, policymakers, researchers, and civil society, in the pursuit of a technological innovation guided by justice, transparency, and inclusion.

References

Barocas, S., & Selbst, A. D. (2016). Big data's disparate impact. *California Law Review, 104*(3), 671-732.

Bawden, D. (2008). Origins and concepts of digital literacy. In C. Lankshear and M. Knobel (Eds.), *Digital literacies: Concepts, policies and practices* (pp. 17-32). Peter Lang.

Bentivegna, S. (2009). *Disuguaglianze digitali. Le nuove forme di esclusione nella società dell'informazione*. Roma-Bari: Laterza.

Boriati, D. (2025). Older people and digital discrimination: Promoting digital literacy to reduce biases in oline social research. *The Lab's Quarterly, XXVII*, 3, in press.

Boriati, D., & D'Ambrosio, M. (2025). Intelligenza artificiale e literacy. Promuovere l'approccio sociologico umano-centrico per superare i pregiudizi e favorire l'inclusione sociale. *Community Notebook. People, Education and Welfare in the Society 5.0, 1*(4), 183-212.

Brynjolfsson, E., Li, D., & Raymond, L. R. (2023). Generative AI at work. NBER Working Paper No. 31161.

Carolus, A., Augustin, Y., Markus, A., & Wienrich, C. (2023). Digital interaction literacy model—Conceptualizing competencies for literate interactions with voice-based AI systems. *Computers and Education: Artificial Intelligence, 4*, 100114.

Carretero, S., Vuorikari, R., & Punie, Y. (2017). *DigComp 2.1: The digital competence framework for citizens with eight proficiency levels and examples of use* (No. JRC106281). Luxembourg: Publications Office of the European Union.

Castells, M. (1996). *The rise of the network society*. Oxford: Blackwell.

Castells, M. (1997). *The power of identity*. Oxford: Blackwell.

Castells, M. (1998). *End of millenium*. Oxford: Blackwell.

Cetindamar, D., Kitto, K., Wu, M., Zhang, Y., Abedin, B., & Knight, S. (2022). Explicating AI literacy of employees at digital workplaces. In *IEEE transactions on engineering management* (pp. 1-14). IEEE.

Cuomo, S., Biagini, G., & Ranieri, M. (2022). Artificial intelligence literacy, che cos'è e come promuoverla. Dall'analisi della letteratura ad una proposta di Framework. *Media Education, 13*(2), 161-172.

D'Ambrosio, M., & Boriati, D. (2023). Digital literacy, technology education and lifelong learning for elderly: Towards policies for a digital social innovation welfare. *Italian Journal of Sociology of Education, 15*(2), 21-36.

Dignum, V. (2019). *Responsible artificial intelligence: How to develop and use AI in a responsible way*. Springer Nature.

Eshet, Y. (2004). Digital literacy: A conceptual framework for survival skills in the digital era. *Journal of Educational Multimedia and Hypermedia, 13*(1), 93-106.

Eshet-Alkalai, Y. (2012). Thinking in the digital era: A revised model for digital literacy. *Issues in Informing Science and Information Technology, 92*(2), 267-276.

Ghallab, M. (2019). Responsible AI: Requirements and challenges. *AI Perspectives, 1*(1), 1-7.

Hargittai, E. (2002). Second-level digital divide: Differences in people's online skills. *First Monday, 7*(4), 1-19.

Heitin, L. (2016). What is digital literacy? *Education Week, 36*(12), 5-6.

Helsper, E. J., & Eynon, R. (2013). Distinct skill pathways to digital engagement. *European Journal of Communication, 28*(6), 696-713.

Hermann, E. (2021). Artificial intelligence and mass personalization of communication content—An ethical and literacy perspective. *New Media & Society, 24*(5), 1258-1277.

Jain, H., Padmanabhan, B., Pavlou, P. A., & Raghu, T. S. (2021). Editorial for the special section on humans, algorithms, and augmented intelligence: The future of work, organizations, and society. *Information Systems Research, 32*(3), 675-687.

Kandlhofer, M., Steinbauer, G., Hirschmugl-Gaisch, S., & Huber, P. (2016). Artificial intelligence and computer science in education: From kindergarten to university. In *2016 IEEE frontiers in education conference* (pp. 1-9). IEEE.

Kong, S.-C., Cheung, W. M.-Y., & Zhang, G. (2021). Evaluation of an artificial intelligence literacy course for university students with diverse study backgrounds. *Computers and Education: Artificial Intelligence, 2*, 100026.

Laupichler, M. C., Aster, A., Schirch, J., & Raupach, T. (2022). Artificial intelligence literacy in higer and adult education: A scoping literature review. *Computers and Education: Artificial Intelligence, 3*, 100101.

Livingstone, S. (2004). Media literacy and the challenge of new information and communication technologies. *The Communication Review, 7*(1), 3-14.

Long, D., & Magerko, B. (2020). What is AI literacy? Competencies and design considerations. In *Proceedings of the 2020 CHI conference on human factors in computing systems* (pp. 1-16). Association for Computing Machinery.

Muawanah, U., Marini, A., & Sarifah, I. (2024). The interconnection between digital literacy, artificial intelligence, and the use of e-learning applications in enhancing the sustainability of regional languages: Evidence from Indonesia. *Social Sciences & Humanities Open, 10*, 101169.

Ng, D. T. K., Leung, J. K. L., Chu, S. K. W., & Qiao, M. S. (2021). Conceptualizing AI literacy: An exploratory review. *Computers and Education: Artificial Intelligence, 2*, 100041.

Ng, D. T. K., Luo, W., Chan, H. M. Y., & Chu, S. K. W. (2022). Using digital story writing as a pedagogy to develop AI literacy among primary students. *Computers and Education: Artificial Intelligence, 3*, 100054.

Nguyen, Q. N., Sidorova, A., & Torres, R. (2022). Artificial intelligence in business: A literature review and research agenda. *Communications of the Association for Information Systems, 50*, 175-207.

Njenga, J. K. (2018). Digital literacy: The quest of an inclusive definition. *Reading & Writing: Journal of the Reading Association of South Africa, 9*(1), Article 183.

Pinski, M., & Benlian, A. (2024). AI literacy for users—A comprehensive review and future research directions of learning methods, components, and effects. *Computers in Human Behavior: Artificial Humans, 2*(1), 100062.

Rainie, L., & Wellman, B. (2012). *Networked: The new social operating system*. Cambridge: MIT Press.

Reddy, P., Sharma, B., & Chaudhary, K. (2020). Digital literacy: A review of literature. *International Journal of Technoethics, 11*(2), 65-94.

Sá, M. J., Santos, A. I., Serpa, S., & Ferreira, C. M. (2021). Digital literacy in digital society 5.0: Some challenges. *Academic Journal of Interdisciplinary Studies, 10*(2), 1-9.

Schuetz, S., & Venkatesh, V. (2020). Research perspective: The rise of human machines: How cognitive computing systems challenge assumptions of user-system interaction. *Journal of the Association for Information Systems, 21*(2), 460-482.

Selwyn, N. (2004). Reconsidering political and popular understandings of the digital divide. *New Media & Society, 6*(3), 341-362.

Tinmaz, H., Lee, Y. T., Fanea-Ivanovici, M., & Baber, H. (2022). A systematic review on digital literacy. *Smart Learn. Environ, 9*(21), 1-18.

van Deursen, A. J., & van Dijk, J. A. (2009). Using the internet: Skills related problems in users' online behaviour. *Interacting with Computers, 21*, 393-402.

van Deursen, A. J., & van Dijk, J. A. (2010). Measuring internet skills. *International Journal of Human-Computer Interaction, 26*(10), 891-916.

van Deursen, A. J., & van Dijk, J. A. (2011). Internet skills and the digital divide. *New Media & Society, 13*(6), 893-911.

van Dijck, J., Poell, T., & de Waal, M. (2018). *The platform society: Public values in a connective world*. New York: Oxford University Press.

van Laar, E., van Deursen, A. J., van Dijk, J. A., & de Haan, J. (2017). The relation between 21st-century skills and digital skills: A systematic literature review. *Computers in Human Behavior, 72*, 577-588.

Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Gomez, A. N., Kaiser, L., & Polosukhin, I. (2017). Attention is all you need. In *Proceedings of the 31st conference on neural information processing systems* (pp. 6000-6010). Association for Computing Machinery.

Villa, M. (2021). *Politiche per l'invecchiamento attivo nel Dipartimento per la Trasformazione Digitale della Presidenza del Consiglio dei ministri: quali possibili obiettivi?* Roma.

Wang, P. (2019). On defining artificial intelligence. *Journal of Artificial General Intelligence, 10*(2), 1-37.

Wolff, A., Gooch, D., Montaner, J., Rashid, U., & Kortuem, G. (2016). Creating an understanding of data literacy for a data-driven society. *The Journal of Community Informatics, 12*(3), 9-26.

Zuboff, S. (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power*. Profile Books Ltd.