

DIGITIZATION AND EDUCATION: critical considerations in the context of childhood

DIGITALIZAÇÃO E EDUCAÇÃO: apontamentos críticos no contexto da infância

DIGITALIZACIÓN Y EDUCACIÓN: consideraciones críticas en el contexto de la infancia

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Abstract

The phenomenon of digitalization within capitalist society has been reshaping contemporary processes of labour, education, and sociability, thereby placing human development at risk. In the context of childhood, children are socially more vulnerable to algorithmic screens, especially through entertainment activities and the occupation of leisure time. Problematizing the contradictions that arise from the tensions regarding the uses and disuses of technologies is a complex, contradictory, and multifaceted endeavor. The general objective of this study is to discuss the uses and disuses of digital technologies during childhood, within the broader phenomenon of social and educational digitalization, particularly that of digital platforms, while paying attention to their potential impacts on human development, given that diverse modes, durations, spaces, and intentionalities of screen exposure are emerging in contemporary society. This study seeks to develop a theoretical and conceptual analysis grounded in a critical-dialectical approach, considering the relationships among Education, Technologies, and Childhood in their different contexts, supported by the theoretical-methodological principles of Historical-Dialectical Materialism. The findings suggest that the phenomenon of digitalization has a substantial impact on children's human development, affecting aspects related to autonomy, freedom, intellectual development, and learning, as well as dimensions associated with health and subjectivity.

Keywords: Childhood. Digitization. Digital Technologies. Platformization.

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Resumo

O fenômeno da digitalização, no âmbito da sociedade capitalista, vem modificando os processos contemporâneos de trabalho, educação e sociabilidade, e submetendo a formação humana a risco. No contexto da infância, as crianças estão socialmente mais vulneráveis às telas algorítmicas, sobretudo em atividades de entretenimento e ocupação do ócio. Problematicar as contradições que surgem diante dos tensionamentos a respeito dos usos e desusos das tecnologias é uma atividade complexa, contraditória e multifacetada. Como objetivo geral, pretende-se discutir os usos e desusos das tecnologias digitais no período da infância, em meio ao fenômeno de digitalização social e educacional, em especial das plataformas digitais, atentando-se aos seus possíveis impactos sobre a formação humana, já que diferentes modos, tempos, espaços e intencionalidades de exposição às telas emergem da contemporaneidade. Busca-se desenvolver uma análise teórico-conceitual com abordagem crítico-dialética, considerando as relações entre Educação, Tecnologias e Infância, em seus diferentes contextos, amparada nos pressupostos teórico-metodológicos do Materialismo Histórico-Dialético. Dos resultados, tem-se que o fenômeno da digitalização causa impacto substancial sobre a formação humana das crianças, em aspectos que transitam pela autonomia, a liberdade, o desenvolvimento intelectual e a aprendizagem, além de aspectos relativos à saúde e à subjetividade.

Palavras-chave: Infância. Digitalização. Tecnologias Digitais. Plataformização.

Resumen

El fenómeno de la digitalización, en el ámbito de la sociedad capitalista, ha venido transformando los procesos contemporáneos de trabajo, educación y sociabilidad, sometiendo a la formación humana a situaciones de riesgo. En el contexto de la infancia, las niñas y los niños se encuentran socialmente más vulnerables frente a las pantallas mediadas por algoritmos, especialmente en actividades de entretenimiento y de uso del tiempo libre. Problematicar las contradicciones que surgen a partir de las tensiones en torno a los usos y desusos de las tecnologías constituye una tarea compleja, contradictoria y multifacética. Como objetivo general, se pretende discutir los usos y desusos de las tecnologías digitales durante la infancia, en el marco del fenómeno de digitalización social y educativa, en especial el de las plataformas digitales, fijándose en sus posibles impactos sobre la formación humana, dado que en la contemporaneidad emergen diversos modos, tiempos, espacios e intencionalidades de exposición a las pantallas. Se busca desarrollar un análisis teórico-conceptual con un enfoque dialéctico-crítico, considerando las relaciones entre Educación, Tecnologías e Infancia, en sus distintos contextos, sustentado en los presupuestos teórico-metodológicos del Materialismo Histórico-Dialético. De los resultados, se observa que el fenómeno de la digitalización genera un impacto sustancial acerca de la formación humana de las niñas y los niños, en aspectos que atraviesan la autonomía, la libertad, el desarrollo intelectual y el aprendizaje, además de dimensiones vinculadas a la salud y a la subjetividad.

Palabras clave: Infancia. Digitalización. Tecnologías Digitales. Plataformización.

Introduction

It is practically impossible to ignore the fact that digital technologies are increasingly present in human beings' daily lives. Whether for communication, entertainment, watching films, or even taking a bus, we now have various platforms

and applications available and accessible through smartphones, with great ease and without restrictions. Although this is not a recent phenomenon, since technologies have always been part of the historical process of humanity, “[...] digital technology is becoming ubiquitous in people’s everyday lives. It is reaching the most remote places in the world” (UNESCO, 2023), generating contradictory discussions about it. Beyond the uses made by adults, in recent years, such discussions have also turned their attention to the excessive use of digital technologies by children, which brings serious risks to children’s human, social, and psychological development. In this sense, the implications of digital technologies for child development are questioned, as well as the potentials and risks of their use, whether inside or outside the school context.

Current studies (Inácio *et al.*, 2019; Habowski; Ratto, 2023a, 2023b; Estefenon; Eisenstein, 2008) provide insights into the excessive use of technologies and the risks it may pose to the physical, psychological, emotional, and cognitive health of children. However, we cannot overlook the fact that digital technologies are part of children’s world in various spatial and temporal dimensions and, contradictorily, carry both benefits and harms. We do not adopt a Luddite⁴ position or one that denies the potential of these technologies, nor do we advocate for a complete prohibition of their use by children. Nevertheless, we present the contradictions inherent to the topic, listing its risks to child development, such as technological dependence, the appropriation of subjectivities, consumerism, and various health risks (Inácio *et al.*, 2019; Habowski; Ratto, 2023a, 2023b; Estefenon; Eisenstein, 2008). Furthermore, there remains the illusory idea of the enhancement and innovation of learning (Belloni; Gomes, 2008) through digital technologies, conveyed by a celebratory perspective that refers to the school context without mentioning the dangers, above all those related to prolonged and unguided exposure.

According to Echalar and Peixoto (2016, p. 215), with regards to technologies in education, the prevailing belief is marked by a predominantly deterministic and,

⁴ Luddism was a social movement led by English textile workers in the early nineteenth century, during the Industrial Revolution. It was characterised by the invasion of factories to destroy machinery as a form of protest, based on the belief that machines were stealing jobs, reducing wages, and deteriorating workers’ living conditions.

above all, illusory conception that “technology determines social progress”. A seductive discourse of educational innovation operates within the context of teacher education, which, in essence, through digital technologies, the precarization of teachers’ labor is materialized by the naturalization of factors such as, for instance, the extension and/or intensification of the working hours, as well as the increase in productivity (Sousa; Peixoto, 2022).

Discussions on the subject have become even more heated with the implementation of Law No. 15.100/2025 (Brasil, 2025), which restricts the use of mobile phones in schools, except for pedagogical purposes and with the teacher’s authorization. The law divides the opinions of education professionals, families and students; however, since the beginning of the 2025 school year, it has been enforced in schools across the country. Bearing this in mind, several questions arise that prompt us to reflect on the use of digital technologies in the context of childhood, such as: What contradictions emerge from the process of social digitalization? What are the impacts of digitalization on children’s human development? Amidst the phenomenon of digitalization, do digital platforms represent potentials or dangers for children, both inside and outside the school context? What consequences for childhood development underlie the notion of an apparent technological advancement that spreads through the ultraliberal market?

It is from this preamble that this research has the general objective of discussion the uses and disuses of digital technologies during childhood, amid the phenomenon of social and educational digitalization, particularly that of digital platforms, focusing on their possible impacts on human development, since different modes, duration, spaces, and intentions of screen exposure are emerging in the contemporary life. To achieve the proposed objective and address the questions mentioned above, this study was divided into two parts: the first, entitled Technology and Childhood: Implications of Use and Disuse, aims to examine the tensions surrounding the use of technologies in childhood, and the second, Between the Use and Non-use of Technologies by Children inside the School, addresses the use of technologies in the school environment and their impacts on the educational context.

Methodology

The methodology consists of developing a theoretical and conceptual analysis with a critical-dialectical approach, considering the relationships between Education, Technologies and Childhood in their different contexts, grounded in the theoretical and methodological premises of Historical-Dialectical Materialism. The methodological path proposed by the Historical-Critical Methodology (Lesnieski, Trevisol e Silva, 2024) was adopted, based on the epistemological framework of Historical-Critical Pedagogy (Saviani, 2019). From a Marxist inspiration and characterized as a counter-hegemonic pedagogical theory, Historical-Critical Pedagogy articulates the appropriation of historically produced knowledge with transformative praxis, understanding education as a possibility for overcoming social contradictions (Saviani, 2019). Systematically, the Historical-Critical Methodology “[...] provides support for educational research that enables the researcher to escape the objectivist instrumentalism of empirical data and/or mere practicality [...]” (Lesnieski, Trevisol e Silva, 2024, p. 3).

The data for analysis were generated through a literature review conducted in the Scientific Electronic Library Online (SciELO) database. Publications produced between 2010 and 2025 were included as part of the study’s selection criteria, this period was marked by the expansion of screen use in childhood, one of the phenomena of social and educational digitalization, as well as studies with critical perspectives on the phenomenon of digital technologies in the educational field, particularly those that dealt with the theme of childhood. As exclusion criteria, studies with an uncritical theoretical framework were disregarded, particularly those that adopted a celebratory or idealized view of technologies, marked by unattainable promises and the neglect of the dialectical contradictions inherent in them, as well as those that merely exalted technological potential through the reproduction of discourses on pedagogical innovation and modernization aligned with market interests. The descriptors used in the searches were as follows: “Technology” and “Childhood”; “Technology” and “Education”; “Technology” and “Historical-Dialectical

Materialism”; “Technology” and “Historical-Critical Pedagogy”; “Childhood” and “Education”; “Childhood” and “Historical-Critical Pedagogy”.

Initially, the results identified forty-eight articles. After reading and analyzing the abstracts and applying the inclusion and exclusion criteria, eight articles remained. Subsequently, a critical analysis was carried out, interweaving them with authors who are epistemologically aligned with or at least in dialogue with the object of this study. With regard to the theoretical framework, Saviani (2017, 2019) stands out as the main author for analysis and discussion, due to his theoretical and intellectual coherence, as well as his systematization of Historical-Critical Pedagogy as a critical pedagogical theory that provides foundations for the analyzing the educational field amid the contradictions of capitalist society.

1 Technology and Childhood: Implications of Use and Disuse⁵

Hypothetically, imagine that your underage daughter is invited to join a human colony on Mars and that she begs you to let her take part. The invitation comes from a visionary billionaire you have never met. As you learn more about the matter, you discover reasons for fear, insecurity and concern (Neto, 2015) and promptly say no to such an insane idea. However, your authorization is not required: it is enough to tick a box stating that the legal guardians agree to the trip, and your daughter is ready to embark. This is the analogy used by Haidt (2024), in his work *The Anxious Generation*, to explain how technology companies enter the world of children and our homes, transforming the lives of children and adolescents.

With the advent of digital technologies and rapid access to the internet, amplified by the advancement of the phenomenon of social digitalization, the notion of celebration and fascination (Pinto, 2005) regarding digital technologies became widespread, associating the use of these tools with ease and convenience in performing everyday tasks. “The founders of these companies were acclaimed as

⁵ The terms “uses” and “disuses” were employed according to Neto (2015). The author conceives the pedagogical use of Digital Technologies (DT) “[...] as a distinct set of practices within the school, since they reveal a concern for the types of knowledge at play, whether pedagogical, conceptual, technological, or contextual” (2015, p. 98). Disuse, in turn, is understood as “[...] the complete absence of DT in teachers’ practices” (2015, p. 69).

heroes, geniuses, and global benefactors who, like Prometheus, brought gifts from the gods to humanity” (Haidt, 2024, p. 11). By referring to the mythological figure of Prometheus, we also allude, by way of contrast, to another mythological figure, Faust. Hermínio Martins (1997) explains that the Promethean tradition presents a benevolent conception of technology for humanity, whereas the Faustian tradition raises doubts about technology, seeking to unmask Promethean arguments. In this sense, we aim to go beyond the idealization of technological neutrality, since, from a critical perspective,⁶ technology is permeated by intentionalities that favor the dominant class and, consequently, the capitalist system. For Gonzalez (2011), it is impossible to sustain neutrality in politics, as in other spheres of social life, since every individual or group assumes a political commitment according to their worldview.

As previously mentioned, it is undeniable that digital technologies have their potentialities and that they are part of everyday human life, whether in the context of adults or children. As observed by Inácio *et al.* (2019), the technological artefacts of the new millennium bring about changes in the ways we read, watch films and even browse the internet, demanding a redefinition of the concept of childhood and of how families coexist and behave. The exposure of children to technologies is not a new phenomenon, since previous generations have dealt with television and video games. Perhaps the greatest difference lies in the fact that now the world fits in one’s pocket, it is portable and presents an infinite number of algorithmic possibilities, with a high risk of appropriating subjectivities.

Information and communication technologies are transforming the world around us, as well as the behaviors and relationships of all people. Searching for information and acquiring new knowledge are almost instantaneous tasks, achieved with a keystroke or a swipe on a smartphone. Children and adolescents are part of the digital generation and use devices, applications, video games, and the internet increasingly at an early age and in all settings (Sociedade Brasileira de Pediatria, 2016, p. 1).

In this context, it is the responsibility of adults, whether teachers or parents, within or outside the school context, to establish boundaries regarding the use of

⁶ “[...]A critical theory (one that is not reproductivist) can only be formulated from the perspective of the interests of the oppressed” (Saviani, 2021, p. 25).

these artefacts and to provide children with a healthy and pedagogical routine, in a way that does not harm their physical or mental health. The aim is not to advocate for non-use, but rather to point out the contradictions present in such uses and the impacts they may have on children's development.

The TIC Kids Online Brasil survey (Comitê Gestor da Internet no Brasil, 2025) found that, in 2024, approximately 24.5 million people aged 9 to 17 were internet users in Brazil (93%) and that the mobile phone was the main device for accessing the network, used by 98% of the population surveyed. Regarding access to the main digital platforms, WhatsApp ranked highest in frequency among internet users aged 9 to 17 (71%), followed by YouTube (66%), Instagram (60%) and TikTok (50%). It should be noted that, in Brazil, the minimum age to use social networks and WhatsApp is 13 years. This means that some users do not meet this requirement and circumvent the rules—often with the consent of their legal guardians. Attention should also be drawn to what we refer to as the phenomenon of platformization,⁷ which, although not recent, gained momentum during the pandemic, generated an enormous accumulation of data for the Big Techs (large technology corporations).

The survey revealed that approximately three out of every ten internet users aged 9 to 17 have guardians who employ tools to block websites, filter applications and restrict the people with whom they can interact. Around 60% of children and adolescents within the same age group have the freedom to watch videos, send messages and play online when they are alone. These data indicate that the majority of children and adolescents have access to the internet and digital platforms, and that a significant portion are free to use them independently and as they wish. They spend their time playing, interacting, entertaining themselves, having fun and consuming products. After all, what are the potential benefits and risks that children face when they begin using digital technologies at increasingly younger ages, for prolonged periods, and in an unrestrained manner? As stated by Haidt (2024, p. 17),

As the transition from play-based childhood to a screen-based childhood progressed, many children and adolescents appeared perfectly content to

⁷ The term "platformisation" or "platform society" describes the way in which human life, as well as its economic and social interactions, are influenced by a global ecosystem of online digital platforms. These platforms operate with the support of Artificial Intelligence algorithms, which use vast datasets (Big Data) to shape experiences and interactions (Comitê Gestor da Internet no Brasil, 2022, p. 18).

stay indoors on the internet, but in the process, they ceased to expose themselves to the physical and social challenges that all young mammals need in order to develop basic skills, overcome innate fears, and prepare to become less dependent on their parents.

The author explains that virtual interactions do not replace the loss of social and physical experiences that children need. Through the internet, children end up navigating adultized spaces and consuming content that can undermine child development. Free time to play is replaced by time spent in the virtual world, “[...] without establishing dialogical relationships, socialisation, and coexistence with family members and others around them [...]” (Inácio *et al.*, 2019, p. 48). Among the risks associated with the use of technologies, Patrícia F. da Silva (2017, p. 50) draws attention to addiction: “[...] engaging with technologies and staying online, whether by exchanging messages, playing games, or performing other activities, triggers the release of dopamine, a neurotransmitter associated with pleasure and addiction, leading the user to remain increasingly connected”. Therefore, adult mediation and the establishment of time limits, as well as monitoring daily technology use outside the school context, become even more necessary, paying particular attention to the purposes and intentions behind such use, whether they are pedagogical or not.

The constant and intensified use of screens without limits and without adult supervision, particularly involving violent games, has consequences for children’s physical and emotional health. According to *Sociedade Brasileira de Pediatria* (2019, p. 3-4), dependence on games that present challenges and rewards “[...] prevents them from confronting the problems that contributed to this toxic stress and the release of cortisol, creating a vicious cycle of anxiety and depression”. It is important to highlight that addiction to online and offline video games is already recognized as a disorder by the World Health Organization (WHO). Early and frequent use of online games, social media, apps, or platforms, within the context of social digitalisation, causes difficulties in socialisation and relationships with others (*Sociedade Brasileira de Pediatria*, 2016). Dependence may generate additional problems, such as increased anxiety, violence, cyberbullying, sleep and eating disorders, sedentary behaviour, and even issues related to sexuality, including exposure to pornography and pedophilia (*Sociedade Brasileira de Pediatria*, 2016).

According to common belief, contact with digital games may be seen as one of the indicators of the disappearance of childhood. However, Habowski and Ratto (2023a, p. 6) state that, “[...] even if the conditions that give substance to the social existence of childhood are in crisis, it will not automatically disappear, because it is one of the pillars of our way of life and an essential figure since the modern era”.

Prolonged screen use (via cellphones, video games, computers, among others), in addition to causing the problems already mentioned, can lead to a syndrome known as technostress. As reported by Eduardo J. C. da Silva (2008), this syndrome consists of an uncontrollable desire to remain connected at all times, checking messages, staying alert to the phone’s notifications, and engaging with the screen during all available free moments. This habit is detrimental to school activities and may also trigger anxiety.

Technostress becomes even more problematic, because it leads to loss of empathy, increasing irritability and aggressiveness, causing changes in behaviour, in family and social relationships, in learning and school difficulties, as well as in various other health issues (Sociedade Brasileira de Pediatria, 2019, p. 4).

Another consequence of excessive screen use is related to eating disorders, that may lead to obesity. As noted by Oliveira *et al.* (2016), screen use has caused changes in people’s lifestyles and in traditional eating habits. Sitting with the family at the table is increasingly being replaced by eating in front of screens. This change has led to poor dietary habits, which are even more worrisome in the case of children and adolescents.

As highlighted by Oliveira *et al.* (2016), research shows that the consumption of snacks while using screens is high and this habit is more prevalent among girls. The authors also state that,

Dietary habits and preferences originate in early childhood. Over the past three decades, globalization has introduced new paradigms and profound changes in food choices. This scenario — combined with the increased use of television and other screens, such as video games and computers, by children and adolescents — undermines the adoption of a healthy lifestyle (Oliveira *et al.*, 2016, p. 2).

In addition to poor diet, sedentary behavior associated with excessive use of technologies is another factor contributing to the rise of childhood obesity. Children

who do not participate in play-based physical activities become more prone to increased calorie intake and fat accumulation (Tavares *et al.*, 2024). This brings us to the idea of the cellphone-based childhood, as presented by Haidt (2024), who explains that children need to play in order to develop, and that the emergence of the cellphone-based⁸ childhood marks the end of play-based childhood. Haidt (2024) asserts that this transition from a play-based to a cellphone-based childhood began in the late 1980s and ended around the mid-2010s, when children and adolescents started to have their own mobile phones. According to Oliveira (2016), the use of screens — from television, videogames, and computers to, more recently, mobile phones — is a cause of children's detachment from play and one of the factors behind sedentary behavior, which worsens due to the lack of physical activity. "Nowadays, the hours spent in front of the TV, on the computer, playing videogames and using mobile phones have created a society in which it is easier to do things, a perfect combination of poor diet and sedentary behavior leading to obesity" (Oliveira, 2016, p. 21–22).

Excessive time spent in front of screens poses another problem for children's mental health: consumerism, which directly impacts the social construction of the individual. "Children are affected by media advertisements and find in them references for the construction of their own cultural identity, shaping themselves according to underlying trends" (Inácio *et al.*, 2019, p. 47). Children are increasingly exposed to advertisements, buying and selling apps, and promotions for various products (toys, clothing, food), which induce purchases and dictate rules, influencing attitudes and behaviours. "Within a capitalist-consumerist system, possibilities of escaping are scarce. When inserted into this space, children are called to participate in this process of a consumerist order" (Habowski; Ratto, 2023b, p. 8). In other words, as a way to include children in this process, advertising invests in and seeks strategies to seduce them "[...] granting them protagonism in view of their potential role in society" (Habowski; Ratto, 2023b, p. 8). This overexposure to advertising, in

⁸ Haidt (2024) uses the term "cell phone" in its broadest sense, encompassing all personal electronic devices with internet access. The word "based," in this context, can be understood as synonymous with "centred".

general, negatively affects children's development, impacting them from early childhood and fostering a passive consumer attitude (Inácio *et al.*, 2019).

Sociedade Brasileira de Pediatria (the Brazilian Society of Pediatrics) has also warned about the dangers of social networks regarding sexuality, "[...] such as increased vulnerability to grooming⁹ and sexting¹⁰, including pornography, facilitated access to pedophilia networks, and online sexual exploitation" (Sociedade Brasileira de Pediatria, 2016, p. 2). According to Lidchi (2008, p. 88), freedom of expression, one of the characteristics of the internet, "[...] exerts an irresistible attraction for criminal networks of sexual exploitation and pedophiles", which further reinforces the need for internet regulation in Brazil as a means of protecting children and adolescents. The sexualization and adultification of children through the use of technological artifacts, more specifically social networks, are causes for concern and have been widely debated in recent months. An exposé¹¹ published by a YouTube influencer brought the topic to public attention and, in light of its repercussions, led to the creation of a Bill (*Projeto de Lei*, PL) aimed at protecting children and adolescents in virtual environments: PL No. 2,628/2022.

Brazilian legislation, through *Estatuto da Criança e do Adolescente* (ECA, Child and Adolescent Statute), in its Article 240, already criminalizes the production, reproduction, direction, photography, filming, or recording, by any means, of scenes of explicit sexual content or pornography involving children or adolescents (Brasil, 1990). The same crime is committed by anyone who displays or transmits, via digital devices or online environments, scenes of explicit sexual content or pornography involving children or adolescents. This Bill (PL) aims to update and expand upon the provisions of the ECA, establishing, beyond the current legislation, protections for children and adolescents on social media, in digital advertising, in electronic games, and in other environments and situations. The debate surrounding this normative expansion concerns the use of digital technologies during childhood, focusing on the

⁹ Grooming via the internet, carried out by an adult who conceals their identity to approach children and adolescents with the intention of committing sexual crimes.

¹⁰ Sending sexually explicit photos, messages, or videos via social media, applications, and mobile devices.

¹¹

Cf.:

<https://www.cnnbrasil.com.br/nacional/brasil/denuncia-felca-adultizacao-afeta-desenvolvimento-explicita-especialista/>. Acesso em: 20 mar. 2025.

protection of personal data and potential impacts on human and fundamental rights, personality rights, democracy, ethics, education, health, and other areas. All things considered, relevant perspectives for the current context, in light of the growing use of digital technologies — such as the dissemination of fake news (disinformation), the creation of filter bubbles, targeted advertising, data breaches, Big Data, transhumanism, the right to be forgotten, and cybercitizenship — are addressed within a factual scenario that underscores the importance of protecting children's rights.

In summary, it is acknowledged that the problems arising from the excessive use of technologies cannot be resolved merely by prohibition. At the same time, the benefits that digital technologies offer to children's affective, social, and cognitive development are not overlooked (Inácio *et al.*, 2019). However, it is necessary to question the use of digital technologies that are unrestrained, uncritical, anti-pedagogical, or lacking mediation or supervision by a responsible adult, exposing their contradictions and consequences. Beyond the consequences already discussed, Haidt (2024) points out additional harms, such as social deprivation, sleep deprivation, and fragmented attention. These harms not only affect children's social development but also directly interfere with learning, compromising both academic performance and social relationships within the school environment.

2 Between the Use and Non-use of Technologies by Children within the School Context

The incorporation of digital technologies into the school environment, particularly through the use of and exposure to screens in Early Childhood Education, presents contradictory challenges. While the potential to diversify methodological possibilities is acknowledged, the harmful nature of excessive, diffused, and unintentional stimuli is also identified. The growing use of digital technologies in childhood expands access to information and experiences and inevitably inserts children prematurely into complex dynamics. According to Marques and Duarte (2020, p. 2215), "[...] education, as an activity intentionally aimed at the production

of humanity, requires systematizations and transmissions to other singular individuals". While school education demands intentionality and systematization in the constitution of humanity, referred to as second nature by Saviani (2019), early and intense contact with digital technologies may anticipate adult practices and experiences, as well as prematurely expose children to the logic of technological reproductive immersion. As observed by Inácio *et al.* (2019, pp. 39–40), with digital technologies, "[...] children come into contact with the adult world ahead of time, and with the potential to imitate it, in terms of hyper-stimulation, haste, consumer logic, and multiple practices that lead to extreme situations".

There is, therefore, a tension between the systematized education necessary for the humanization of individuals and the fragmented, ideologized stimuli produced by digital technologies. This contradiction reveals the urgency of understanding the limits, possibilities, and intentionalities of technological mediation in childhood, and above all, critically relating these elements to pedagogical conceptions centered on the motto learning to learn (Duarte, 2001), which leads schools to "[...] prepare individuals to learn whatever may be required of them by the process of their adaptation to the alienated and alienating social relations that govern contemporary capitalism" (Duarte, 2001, p. 29). According to Ferreira and Duarte (2012), the learning to learn motto privileges only the knowledge that the student builds spontaneously and autonomously, to the detriment of knowledge systematically transmitted as part of humanity's heritage. In contrast to the pedagogical conceptions aligned with the learning to learn motto, which limit human formation to spontaneity and to the adaptive logic of individuals, Castro (2022, p. 67) highlights the dimension of the constitution of the humanity of the subjects through historical appropriations:

Their individuality is constructed, therefore, as they appropriate the objectifications created by humankind. In this way, their singularity as individuals expresses the synthesis of the appropriations of what has been objectified by previous generations, and not the opposite. [...] The child has the possibility of constituting themselves as a humanized being as they make their activity more complex and enriched. Education thus has the function of producing the humanity of individuals.

The institutional response to mitigate the effects of incorporating digital technologies at the detriment of human formation constitutes a normative and restrictive deliberation regarding their use in the school setting. Thus, in an attempt to control the spread of technological artifacts, Law No. 15.100/2025 was introduced, which “[...] establishes provisions regarding the use of personal portable electronic devices by students within public and private basic education institutions” (Brasil, 2025). This normative instrument arises from a context marked by the growing presence of digital technologies in children’s daily lives, both in social and educational environments.

The regulation of the use of digital technologies raises reflections on the systematization of technological consumption (Ferreira, 2015). The legislation under discussion reflects an intentionality of a disciplinary and organisational nature, above all, as an attempt to respond to social rather than academic debates concerning the effects of digital technologies on the cognitive, social, and cultural formation of new generations.

The very process of technological development within capitalist society takes place amid spaces of contradiction, involving the following aspects: a) technological development is intrinsically connected to increased productivity (and consequently to the inescapable competitive nature of this mode of production), and through it, to the dynamics of crises of overproduction; b) since the crises of capitalism are linked to overproduction (and conversely to underconsumption), one of the vital needs of this mode of production is to exploit the maximum possibilities of social consumption (Ferreira, 2015, p. 92).

In contrast to the prohibition of cellphone use in schools, *Grupo de Trabalho* No. 16 (GT-16 Working Group) - *Educação e Comunicação* (Education and Communication), of *Associação Nacional de Pós-Graduação e Pesquisa em Educação* (ANPEd, National Association of Graduate Studies and Research in Education), emphasizes, in an official statement, the importance of involving the school community in the collective construction of pedagogical decisions regarding cellphone use, particularly in relation to teachers’ pedagogical autonomy (ANPEd, 2024). According to ANPEd’s GT-16 (2024), the absence of public hearings and broad consultations undermines the legitimacy of this measure, which has a direct impact on schooling and learning. The aforementioned GT argues that,

[...] it is necessary to ensure digital sovereignty and the pedagogical autonomy of teachers and to pursue diverse creative and critical uses of all types of technologies, whether analog or digital, in order to promote the development of the process of appropriation of all human productions (ANPEd, 2024, p. 3).

In the analysis of Echalar (2025, p. 5), who is currently the coordinator of ANPEd's GT-16, "[...] pedagogical mediations are grounded in the relationships among teachers, students, and the knowledge to be appropriated, in diverse contexts". The perspective that seeks to restrict the use of digital technologies, particularly in the discussion about mobile phones, proves insufficient to address the complexity of contemporary pedagogical relations that interweave teacher autonomy, critical knowledge appropriation, and the role of digital technologies in students' everyday lives.

Although Law No. 15,100/2025 was enacted without broad discussion with representative entities from the educational field, it is possible to identify partial traces of concern for the holistic formation of individuals, extending beyond school activities. The contradictory context in which this legislation emerged, marked by the restriction of collective and organic participation, has resulted in a law that manifests itself concretely in a limited and fragmented manner, disregarding the intellectual production developed in the field of Education and Technology. There is a need for a theoretical effort grounded in broader pedagogical conceptions related to omnilateral human formation, that is, an understanding that encompasses the full range of human potentialities across expanded dimensions (Saviani, 2017). However, it is worth mentioning the point made by Saviani and Duarte (2021, p. 62): "[...] omnilateral human formation will not be fully achieved within capitalist society, as such formation requires a radical transformation of the entire system of social relations to which we belong".

According to Habowski (2023), in contemporary capitalist society, individuals are subjected to an intense overload of stimuli, especially audiovisual ones, which compete for sensory attention. With the advance of neoliberalism, economic pressures intensify and the flexibilization of market rules has become consolidated, contributing to the acceleration of social relations mediated by technological artifacts and to an experience marked by constant stimulation. This is a favorable scenario for

consolidating and expanding digital technologies, precisely because “[...] technological development and the wide dissemination of products from the culture industry have paved the way for the overflow of stimuli, resulting in a significant acceleration of our interaction with the elements of the world” (Habowski, 2023, p. 112).

Despite its modern and innovative appearance, the use of technologies conceals, paradoxically, the promotion of social and digital inequality, because “[...] as technology is not equally distributed, it creates a group of winners and a group of losers, a group of the included and a group of the excluded” (Martins, M., 2019, p. 8). It becomes evident that, under the logic of capital, the massive diffusion of technology intensifies inequalities and sustains narratives that exalt its potential while disregarding the material conditions and concrete contradictions that shape the school reality.

If, on the one hand, it is evident that digital technologies are often presented as tools with great potential for use in the teaching and learning process, including in early childhood education (Martins, M., 2019), on the other hand, the ideological and fetishised bias underlying this narrative is obscured. By sustaining the idea that technological artifacts operate as a miraculous solution for the field of education, structural factors within the capitalist dynamic are intentionally disregarded, such as the unequal conditions of access to school knowledge, the limitations of school infrastructure, and the historical contradictions of educational policies (Peroni; Pires; Lima, 2025). These are examples of ongoing struggles against hegemonic policies rooted in Brazilian education, which reproduce inequalities and reinforce social exclusion, highlighting that the mere incorporation of digital technologies into the educational process does not, by itself, ensure the transformation of educational reality.

Believing in this illusion is akin to believing that the use of technologies depends solely on teachers and, above all, that the problems arising from these technologies are attributed to the lack of teacher training for the use of technological artifacts. The blame for the absence of digital literacy is placed upon teachers, when, in fact, there is no critical examination of the intentions and interests underlying the

promotion of technology use in schools, which are themselves rooted in capitalist society, a system that transforms them into commodities.

In contemporary times, digital technologies are appropriated by capitalism to mask the complexity of the social, historical, and pedagogical determinants that permeate the educational field, particularly because these determinants directly influence the use of technological artifacts. According to Maurício R. Martins (2019, p. 5), “[...] the emancipation we seek certainly requires both familiarization with possibilities and resistance to excessive enchantment with technology”. The critique by Echalar (2025) connects the notion of a solution driven by capitalist dynamics to the class struggle, since “[...] alienation is one of the means through which capitalist society seeks to appease the working class in the absence of its rights, and it materializes through processes of exclusionary inclusion, which are naturalised through the digital utopia” (Echalar, 2025, p. 7). Thus, presented as promises of innovation and digital transformation (Peroni; Pires; Lima, 2025) and as commodities that embody technological solutionism (Morozov, 2018), technologies function as mechanisms for the reproduction of social inequalities. As Morozov (2018, p. 52) rightly argues, “[...] technology is used as a form of concealment for politico-ideological projects that end up being justified through the solutionist discourse”.

Final Considerations

This study aimed to discuss the uses and disuses of digital platforms by children in times of digitalization, as well as their possible impacts on human formation. It is evident that technologies bring conveniences and positive transformations to everyday social life, yet they also have undeniable negative repercussions. Children are part of this society, and “[...] it is evident that new forms of childhood are emerging, mediated by cultural constructs, including digital technologies, with different characteristics and ways of relating” (Habowski; Ratto, 2023b, p. 4).

As a contribution to the educational field, this study sought to present the contradictions and tensions surrounding children’s use of digital technologies, inside

and outside the school context. The aim was to contribute to studies addressing the relationship between childhood and digital technologies from a critical perspective, moving beyond the celebratory and redemptive conception that remains a gap to be filled, as it still remains very present in pedagogical discourses.

When it comes to childhood, time control and adult supervision are fundamental to prevent the use of digital devices from bringing serious consequences to children's physical and mental health (such as sedentarism, anxiety, and social isolation, among others), as well as exposure to situations involving the risk of becoming victims of sexual crimes. The shift from a play-based childhood to a phone-based childhood needs to be included in the agenda of discussions surrounding technology studies. The idea that children need contact with technological artifacts from an early age in order to develop the skills demanded by the digital world must be deconstructed, since technology is not a panacea for issues of socialization or entertainment. The way it has been used and the content might present risks to child development. This is the discussion that demands our critical and attentive engagement.

With regard to its educational use, much remains to be investigated, as there is still no clear evidence that it enhances learning. According to *Relatório de Monitoramento Global da Educação* (Global Education Monitoring Report), "[...] the use of technology by students in classrooms and at home can be a distraction, hindering learning" (UNESCO, 2023, p. 16). As for teaching, what we observe today is the replacement of one artifact by another, even though the way they are understood and used remains the same. "Given that most technologies were not conceived for educational purposes, their adequacy and pedagogical value need to be assessed in relation to a human-centered conception of education" (UNESCO, 2023, p. 22). However, it is important for teachers to question the intentions behind these artifacts, since neutrality does not exist, and large corporate conglomerates hold their power and ownership. Additionally, there are dangers in the hyper-individualization of the student, in the reduction of education to mere learning, and in the commodification of education. Our purpose is not to side with either Faust

or Prometheus, but to critique the contradictions present in order to move beyond them.

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