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CURRENT PERSPECTIVES

Screens in Schools: A Call for Balanced Guidelines on The Use of Digital Tools in Education

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Digitalization has reshaped modern society, changing how we communicate, learn, and interact with one another. Initial efforts to digitalize the education system date back to 2000 but were accelerated mainly following the COVID-19 pandemic. The lockdown measures led to a sudden need for remote learning, but over time this exposed significant weaknesses in technology access, deficient digital literacy among both students and teachers, and some difficulties in ensuring learning continuity at a distance.[1] Therefore, the pandemic acted as a starting point for a structural transformation of the education system.

While digital tools have become central to this transition towards digitalization, their integration into childhood education continues to raise questions, particularly regarding their impact on neurodevelopment.[2] In Portugal, the recent recommendations issued by the Portuguese Society of Neuropediatrics (SPNP) discourage the use of digital textbooks until the end of middle school, citing concerns about cognitive overload and excessive screen time.[3] However, a nuanced, evidence-informed approach is urgently needed—one that considers both the risks and the untapped potential of technology in education when used intentionally, appropriately, and with adult mediation.[4,5]

The European Union's Digital Education Action Plan (2021–2027) and Portugal's National Digital Transition Plan (2020) laid the foundations for a long-term restructuring of the educational system, with the common goals of personalized learning, digital literacy, and equitable access to technological resources.[6] These initiatives led to the implementation of the Portuguese Pilot Project on Digital Textbooks (PPDT), currently reaching over 13,000 students in public schools.[1] While its adoption in private institutions remains unclear, the shift towards digitalization is undeniable and growing. Yet, the presence of technology alone does not guarantee learning. Poorly implemented digital tools may hinder, rather than help, child development. The digital transition should not simply replace paper with screens, it should aim to incorporate the use of digital tools to enrich pedagogical strategies and support children's developmental stages.

The ongoing debate around screen use has often focused excessively on duration, ignoring some key contextual variables. The term "screen time" encompasses a wide range of experiences: passive versus active engagement, supervised versus unsupervised use, and entertainment versus educational purposes. Screens can certainly be a distraction, but they can also foster creativity, autonomy, and problem-solving when integrated in learning with pedagogical intention and adult mediation.[5] Recent studies reinforce that content, context, and co-use matter more than duration of use. Active screen time, such as using interactive educational applications with adult guidance, can support the development of academic and executive functions.[7] Conversely, unsupervised passive consumption has been linked to poorer language development, self-regulation issues, and sleep disturbances.[8]

Additionally, not all digital devices serve the same purpose. While smartphones are often associated with a risk of distraction and passive consumption, tablets and computers tend to support more structured, interactive, and educational use when integrated adequately into learning environments.[2] However, a review of the literature also revealed a significant limitation: most studies focus on preschool children and rarely differentiate between entertainment and educational uses. This oversimplification can perpetuate a simplistic "screens are bad" narrative.[4]

In 2024, the SPNP released guidelines on screen use in the pediatric population, recommending a return to paper textbooks until at least the 9th grade. While well-intentioned, this position is primarily informed by evidence highlighting

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the risks of passive screen exposure and excessive screen use, especially in early developmental stages. Although some studies cited in the guidelines do report on school-aged children, the overall emphasis remains on risks associated with unsupervised or passive use, rather than on intentional, educational integration.

Nonetheless, the recommendations do not fully consider emerging data on the structured, pedagogically guided use of digital tools in educational contexts. This blanket exclusion may ignore data from projects like the PPDT. According to a mid-term evaluation of the PPDT, which involved nearly 10,000 students and 1,400 teachers, over 70% of students found digital textbooks engaging, one-third reported greater ease and autonomy in learning, and most teachers identified benefits in personalization. Reported challenges included visual fatigue and reliance on internet access. These concerns should lead to practical solutions, rather than the abandonment of digital tools.[1]

Additionally, several studies have demonstrated that, when digital tools are used with pedagogical intention and guidance, they can support both academic and socio-emotional development. For example, interactive and well-designed educational applications can enhance language acquisition and vocabulary development.[9] Digital tools, such as tablets, used in the classroom can foster collaboration, improve critical thinking, and promote problem-solving skills. Other studies highlight the potential of educational media to strengthen digital literacy and engage students through multimodal content, particularly when aligned with curriculum goals and supported by teacher guidance. The integration of educational technology that promotes active engagement can improve foundational motor skills and executive functioning.[9,10] These findings suggest that screen-based learning, when thoughtfully implemented, can complement traditional education and contribute to key developmental domains.

Healthcare professionals can play a crucial role in guiding screen use during childhood, both at school and at home, taking into account the child's developmental needs, family context, and educational environment. Recognizing the rising need for direction in this area, we call on professional societies, namely the Portuguese Society of Neurodevelopment (SPND), to develop and issue evidence-based recommendations that:

- Differentiate between entertainment and educational screen use;
- Promote the intentionality of digital tools with specific pedagogical goals, rather than as a substitute for traditional methods;
- Support adult mediation, co-use, supervision, and discussion to enrich digital experiences;
- Restrict access to non-educational content through school-wide policies and controls that block inappropriate material;
- Clarify device use in schools, prioritizing laptops or tablets for learning tasks and limiting personal smartphone use during class time and recess;
- Critically assess "educational" applications by involving professionals with expertise in child development, neurodevelopment, and pedagogy, ensuring that the applications used are developmentally appropriate, scientifically grounded, and free from misleading or commercial content;
- Support equity by ensuring that all students have access to high-quality digital resources;
- Encourage digital literacy and healthy screen habits as part of the curriculum;
- Invest in teacher training on child development, media literacy, and the pedagogical use of digital tools;
- Foster collaboration between healthcare professionals and educators to support the selection and implementation of digital tools in schools, ensuring that the technology aligns with the pedagogical goals and the developmental needs of children;
- Align families' and schools' expectations to foster consistent screen-use habits across the home and school environments;
- Fund research to monitor the effects of digital learning tools across developmental stages and to identify best practices;

Digital textbooks are neither inherently harmful, nor inherently helpful. Their impact depends entirely on how they are used. With adequate adult mediation, age-appropriate content, and educational intent, they can enrich learning experiences, foster autonomy, and prepare children for a digital world. Rejecting them entirely may deprive children of the opportunity to develop critical digital competencies of the 21st century. The digital transition in education is already underway; our responsibility is to guide it thoughtfully and responsibly.

AUTHORSHIP

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