

INCLUSIVE LEARNING WITH DIGITAL TOOLS: SEA TEACHER INSIGHTS ON AUTISM AND DOWN SYNDROME

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RESUMO

The integration of digital technologies in education has emerged as a key strategy to enhance learning, participation, and equity in contemporary classrooms. Within the field of special education, digital media plays a particularly significant role by offering interactive and adaptive tools capable of meeting the individual needs of students with diverse learning profiles. Children diagnosed with Autism Spectrum Disorder (ASD) and Down syndrome often experience difficulties in communication, social interaction, and cognitive processing, which require differentiated pedagogical approaches and tailored resources. In this context, digital tools—such as educational games, interactive platforms, audiovisual materials, and assistive technologies—can provide meaningful opportunities for engagement and inclusion. This study investigates how digital media contributes to inclusive practices in Specialized Educational Assistance (SEA), focusing on its impact on students with ASD, Down syndrome, and neurotypical peers in an inclusive public school setting.

The theoretical foundation of this research is grounded in three main frameworks. First, Piaget's constructivist perspective (PIAGET, 1952), which emphasizes active exploration and individual engagement in the learning process, supports the view that interactive technologies can stimulate cognitive development at different stages. Second, Vygotsky's sociocultural theory (VYGOTSKY, 1978) situates learning as a socially mediated process, where digital tools serve as cultural artifacts that enable scaffolding within the Zone of Proximal Development (ZPD). Third, the Universal Design for Learning (UDL) framework (CAST, 2018; MEYER; ROSE; GORDON, 2014) highlights the importance of providing multiple means of representation, expression, and engagement, aligning well with the flexibility offered by digital technologies. Together, these perspectives present a robust theoretical foundation for understanding how digital media fosters inclusive educational environments.

Methodologically, the study adopts a qualitative research design, combining (1) a focused literature review of publications from the last decade on digital media and special education, and (2) a semi-structured interview with a SEA teacher working in an inclusive public school. The literature review aimed to identify evidence-based practices and pedagogical strategies involving technology in teaching students with ASD and Down syndrome. The interview sought to capture the teacher's perceptions, practices, and challenges regarding the integration of digital resources in her classroom. Data were analyzed using thematic content analysis (BRAUN; CLARKE,



2006), which allowed for the identification of recurring themes and the triangulation of empirical evidence with theoretical insights.

The findings indicate that digital resources contribute significantly to the cognitive, communicative, and socio-emotional development of students. For children with ASD, structured and predictable digital resources—particularly visual and auditory tools—proved effective in reducing anxiety and supporting symbolic understanding. This corroborates Alzrayer and Banda (2017), who emphasize that iPads and similar devices enhance communication and reduce behavioral stress in autistic learners. For students with Down syndrome, digital games with immediate feedback and repetitive activities fostered greater engagement and persistence, reinforcing findings by Mechling (2007), who noted the value of assistive technologies in promoting memory and motor skills. Interestingly, neurotypical students also benefited from digital integration, particularly in collaborative digital activities that fostered empathy, cooperation, and prosocial behavior, consistent with Johnson, Johnson, and Holubec's (2016) framework on cooperative learning.

Beyond student outcomes, the interviewed teacher highlighted the importance of continuous professional development. Participation in online platforms such as CEPFO was considered essential for adapting digital tools to classroom objectives, sharing experiences, and accessing innovative practices. This aligns with Santos and Rego (2021), who stress the relevance of teacher training and digital competence in inclusive education. However, significant challenges were also identified: insufficient technological infrastructure in public schools, limited access to evidence-based assistive applications, and a lack of targeted teacher training to manage diverse learner profiles (MORAN, 2019). These obstacles underscore the need for institutional investment in infrastructure and structured professional development programs.

The study concludes that digital media, when purposefully integrated and aligned with UDL principles, can act as a transformative force in inclusive education. By offering flexible means of engagement and representation, digital tools promote autonomy, reduce barriers, and strengthen equity in learning. However, their effectiveness depends on systemic support, including adequate infrastructure, evidence-based resources, and sustained teacher training. As suggested by Al-Azawei, Serenelli, and Lundqvist (2016), inclusive education is most effective when technology is applied intentionally and contextually, with a clear pedagogical framework.

This research contributes both to academic debates and to practical discussions on inclusive pedagogy. By combining theoretical perspectives, empirical evidence, and practitioner insight, it provides relevant guidance for teachers, policymakers, and researchers seeking to leverage digital media in inclusive education.

Recommendations include developing context-specific toolkits that integrate digital media into SEA practices, expanding empirical studies on the impact of specific technologies across different disabilities, and designing scalable professional development models for SEA teachers. In doing so, the study highlights not only the opportunities but also the structural challenges of digital inclusion, reinforcing the idea that equity in education requires both innovative practices and systemic commitment.

Keywords: Digital Media; Inclusive Education; Specialized Educational Assistance; Autism Spectrum Disorder; Down Syndrome.

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