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THE BENEFITS OF DIGITAL TECHNOLOGY IN SPECIAL & INCLUSIVE EDUCATION AND HEALTH PROMOTION OF CHILDREN WITH DISABILITIES - BUILDING BRIDGES AND PERSPECTIVES

Vasiliki Ioannidi[i]
Dr., Adjunct Faculty,
Hellenic Open University,
Greece
Dr., Adjunct Faculty,
Open University of Cyprus,
Cyprus

Abstract:
This study aims to investigate how different topics are related and can be integrated into a coherent conceptual framework through a 'building bridges' review in the field of inclusive education. It highlights the fundamental concepts that constitute the field of special and inclusive education in combination with digital technology, viewing this as an open and continuous process for improving relationships and processes to achieve equality and participation for all without discrimination. The study focuses on the benefits of inclusive technology and provides illustrative examples of how digital tools contribute to the inclusion of all children. Additionally, it identifies key indicators linking the topic to the health promotion of children with disabilities. The choice of this topic is based on its social and educational significance, emphasizing the connection between education, technology, and health promotion with a focus on inclusion. Overall, it presents conceptual, theoretical, and applied dimensions that collectively contribute to the interdisciplinary field of inclusive education, highlighting the necessity of bridging key dimensions in its practical implementation.

Keywords: inclusive education, special education, inclusion, digital technology, assistive technology, health promotion, disabilities

1. Introduction

Modern societies are characterized by continuous changes at the economic, cultural and technological levels (Ahmad et al., 2024), which decisively influence the way education is organized and its role in the process of transformative processes (Selwyn, 2019; Wang,

[i] Correspondence: email ioannidi.vasiliki@ac.eap.gr, vasiliki.ioannidi@ouc.ac.cy

2025; Moore et al., 2026). In the context of globalization, education emerges as a key mechanism for including the individual – and especially children and young people – in the increasing demands of knowledge, technology and social mobility, thus highlighting the value of inclusive frameworks (Holzer, & Moser Opitz, 2025; Stalidis, 2024; Mag et al., 2017).

Today, the concept of inclusion does not simply refer to the placement of students with special educational needs and/or disabilities in the classroom. It mainly refers to their dynamic involvement in every aspect of the educational process in modern hybrid learning environments and the social and pedagogical interactions that result from this, e.g. learning, design and technology in the age of AI (Giannakos et al., 2025). Thus, the term "E-inclusive" pedagogy" refers to teachers' decisions to provide their students with innovative ways of learning and alternative means of completing their tasks, integrating technology into educational activities in blended learning. In this context, research results have shown that teachers who provide authentic opportunities for interaction and learning to all their students and flexibly integrate new technologies into their teaching strategies contribute significantly to the acquisition of academic but mainly functional life skills, preparing them for important employment opportunities and inclusion into community life (Karagianni & Drigas, 2023).

Therefore, inclusive education and digital technology are fundamental concepts of modern pedagogy and reflect the need for an open, democratic, modern and responsive school (Ioannidi, 2022). Here, it is important to emphasize that inclusive education is based on the principle that all students, regardless of gender, socioeconomic background, cultural identity, learning difficulties or disabilities, have the right to participate equally in the learning process (CRPD, 2006). Similarly, according to UNESCO (SDG 4)*, inclusive and equitable quality is education for all*. Its aim is not simply to integrate students into the school environment, but to actively participate and develop their potential through inclusive pedagogical methodologies. In essence, inclusion is action and practice for all students (Ioannidi, 2022; Ioannidi & Malafantis, 2022) and inclusive education practices assessed include teaching strategies, classroom modifications, and support services (Lambra et al., 2025).

On the other hand, digital technology in the modern world is not only a tool, but also a living environment that opens up new opportunities: learning at any convenient time, continuous education, etc. (Bilyalova, 2020), connecting the innovative use of digital tools and technologies with inclusive teaching and learning with new pedagogical practices (Santaengracia et al., 2026). At the same time, "*inclusion of all learners is essential for high-quality digital education, but is also a complex issue. Digital learning environments and digital media use provide both support for and barriers to greater inclusion in education in general and in digital education in particular*" (Inclusive Digital Education, 2022, p. 39). In particular, a source from the European Agency for Special Needs and Inclusive Education "*presents key changes in thinking and concepts around inclusive education and developments in digital technology. It stresses the influence of digital advancements on teaching and learning opportunities and indicates how inclusive education and digital technology are interconnected. It*

argues that the successful transformation of inclusive education systems must account for successful digital transformation" (https://www.european-agency.org/resources/publications/IDE-think-piece).

In this light, the article highlights fundamental concepts that constitute the field of special and inclusive education, in combination with digital technology, as an open, continuous process of improving relationships and processes to achieve equality and participation of all without discrimination. It focuses on the benefits of inclusive technology and explains with indicative practical examples how digital technology contributes to the inclusion of all children. The study emphasizes digital innovation to consolidate inclusive education and empower teachers in digital technology. Afterwards, it includes key indicators linking the topic with the promotion of the health of children with disabilities.

The contribution of this paper is that:

- It presents combined conceptual, theoretical and applied dimensions contributing to the interdisciplinary field of inclusive education and demonstrating the necessity of bridging key dimensions in the implementation of inclusive education.
- It integrates and highlights relationships between individual thematic areas that may seem distinct but have significant interactions in the field of educational sciences, with an emphasis on the inclusion of all children.
- It helps the education professionals to understand how different subjects – special and inclusive education, digital technology and health promotion – are connected and how a literature search can bridge these relationships through a combination and synthesis of sources and ideas.

2. Purpose and research question

First, the objective of this paper is to bridge the literature on inclusive education, the benefits of digital technology and health promotion of children with disabilities, highlighting the conceptual and functional connections between the three fields in the interdisciplinary context of inclusion. Importantly, this study aims to investigate the way in which different topics are related to each other and can be integrated into a coherent conceptual framework, through a building bridges review. The choice of the topic was based on its social and educational importance through the connection of education - technology - health promotion, with a focus on inclusion.

The fundamental research question is: "How can inclusive education, digital technology and health promotion be connected into a coherent conceptual and functional framework that enhances equitable participation, well-being, and learning outcomes for all?"

3. Method

It is common knowledge that literature review can take various forms, one of which is "building bridges" review between related topics (Cooper, 2010, as cited: Creswell & Creswell, 2019, p. 59). Specifically, according to Cooper (2010), the literature review is not limited to the summary presentation of previous research, but can perform a broader synthetic role. In particular, one of its main functions is to bridge related research fields by highlighting conceptual and theoretical connections between issues that are often examined in isolation. Through this process, the review contributes to the unification of existing knowledge, facilitates the understanding of the relationships between different research fields and creates the conditions for the development of new research perspectives. In this case, the literature that "builds bridges" is not organized chronologically or thematically with narrow boundaries, but is structured in such a way as to show how different corpora of knowledge converse and focus on building bridges between related topics/fields, that is, to show connections, relationships, communications between different but related research areas. Cooper (2010) suggests that such a review does not simply summarize research but organizes and connects themes, highlighting ways in which ideas, theories, and opportunities for future research can be advanced. Consequently, the building bridges review is synthetic, theoretically oriented, and it offers originality through connecting themes and contributes to the conceptual advancement of a field.

Through our work – "Building Bridges" Review (Cooper, 2010), the aim is to present a literature review focusing on the benefits of digital technology in special and inclusive education and the connection of these benefits to the health promotion of children with disabilities. This article adopts a synthetic literature review approach aimed at bridging related theoretical and empirical research data, highlighting conceptual, theoretical and applied connections. In this formulation, data collection was implemented through a literature review, which included scientific books in the field of science and education, articles from reputable international scientific journals, reports and texts from international organizations, and bibliographic research in databases such as Research Gate and Google Scholar. Basically, the criteria for selecting sources included relevance to the research topic, scientific validity, timeliness and international recognition. The selection of articles was based on the interconnection of topics "Inclusive education – digital technology – health promotion of children with disabilities" through relevant keywords. Above all, this research produces a unifying approach to the topic and puts the topicality of the topics on the modern research agenda. Further to this, the work is divided into two parts: (a) the redefinition of Special and Inclusive Education through digital innovation and (b) the educational and psychopedagogical benefits of technology.

3.1 Redefining Special and Inclusive Education through Digital Innovation

In short, according to international organizations (OECD, 2018, 2019, 2021 / European Commission, 2016, 2020, 2022 / UNESCO, 2015, 2021), the rapid development of information and digital technologies is redefining the concept of human resources, making skills such as flexibility, adaptability, communication, taking initiatives and the ability to manage complex situations central. However, these developments also highlight new forms of social inequalities and exclusions, especially for population groups with increased educational and psychosocial needs. In this context, critical questions are raised regarding the role of education in reducing inequalities, limiting social exclusion and utilizing new technologies as tools for pedagogical and social empowerment. From this perspective, new digital information and communication technologies, constituting a scientific, social, pedagogical and productive innovation, can be used in the most effective way for the education of people with disabilities based on the United Nations Convention on the Rights of Persons with Disabilities (CRPD, 2006).

In total, the contribution of digital technology and AI in the field of Special Education becomes particularly important. Moreover, the integration of artificial intelligence (AI) in education offers significant potential for identifying and supporting all students (Zraydi et al., 2026), including those with learning difficulties and other disabilities or/and special educational needs (Kirk et al., 2021). Rodrigues (2026) emphasises that while an understanding and acknowledgement of special education is important, it is essential that all young people are educated in the shared and welcoming spaces of inclusive classrooms. This, he explains, not only has positive effects on the learning of all students, but is hugely beneficial in terms of exposing young people to difference and diversity from an early age. E.g. the term “assistive technology” refers to a set of teaching and technological adaptations using digital tools, applications, and support systems that are tailored to the needs of individuals with cognitive, sensory, or physical disabilities. These include, among others, reading and writing support software, voice recognition systems, information organization and retrieval aids, and alternative communication systems (https://iris.peabody.vanderbilt.edu/module/acc/). This technology - e.g. object, equipment, product - functions as an external or adapted or modified support framework that enhances communication, learning, autonomy, and participation of individuals with disabilities in educational and social life by increasing, maintaining, and improving the functional abilities of children with disabilities (Heward, 2025; Smith & Tyler, 2019).

Undoubtedly, digital technology has the potential to bring together students, teachers and educational content through advanced learning technologies that support learning, teaching and distance education. As Mashhadi & Kargozari (2011) state, information technology affects all aspects of human activity, and education is no exception; its impact on education and training is inevitable. A digitally literate citizen will be able to learn and take responsibility for his/her learning; therefore, this results in a greater demand for education and a sense of the need for more equipment and tools. Using information technology, students can decide about their study, their time, place

and resources. In a digital environment, students can share their ideas and experiences and use the help of other students and teachers. Additionally, the digital classroom includes all forms of electronically supported learning and teaching. Information and communication systems, whether networked or not, serve as specific ways for implementing the learning process. It is essentially the transfer of skills and knowledge via computer and network. Digital classroom applications and processes include web-based learning, computer-based learning, virtual classroom opportunities, and digital collaboration. It can include media such as text, images, animations, streaming video, and audio in both self-regulated and non-self-regulated learning.

According to Petropoulou et al. (2015a; 2015b; 2015c), digital education utilizes new technologies to enrich the learning process and constructively and positively engage learners. Through the research literature, the importance of practical examples is highlighted, such as through interactive whiteboards, electronic learning platforms (e.g. MOODLE), virtual learning environments and digital communities that function as learning communities, educational software and digital material with modern teaching techniques, students can (Navas-Bonilla et al., 2025; Zhao & Shi, 2022):

- Personalized learning,
- Choose different ways of approaching knowledge,
- Develop digital literacy skills,
- Be assessed with modern techniques through the contribution of new technologies.

Especially for students with disabilities and/or special educational needs, digital tools offer (Navas-Bonilla et al., 2025; Duarte et al., 2026):

- Adapted material and multimodal media (image, audio, video),
- Personalized learning and effective learning,
- Alternative assessment methods,
- Possibility of autonomy and strengthening of self-confidence.

However, the successful implementation of inclusive digital technology requires appropriate training of teachers, the pedagogical use of technology and equal access of all students to digital media. Thus, addressing the digital divide and developing supportive policies are essential so that no student is left behind (Graham, 2023), because promoting positive social interactions in the classroom has become a crucial component of teachers' tasks and is critical for educational quality (Mels, 2026). It is no coincidence that Masrukhi et al. (2026) underscore the need for inclusive teacher training, strengthened support systems and systematic evaluation to maximise the role of inclusive education in civic intelligence development.

3.2 Educational and psychopedagogical benefits of digital technology in special and inclusive education

Given that digital technology plays a crucial role in modern educational systems, the use of digital technologies, such as interactive whiteboards, e-learning platforms, educational software and accessibility applications, can transform teaching and make it more flexible

and personalized. Students have the opportunity to learn individually and collaboratively and develop digital literacy skills, essential for the modern information society (Sofos et al., 2015; Papadimitiou & Sofos, 2022; Anderson, 2011). More specifically, for students with disabilities, digital technology offers significant advantages. Tools such as text-to-speech, multimodal media (image, audio, video), adapted activities and alternative assessment tools enhance their autonomy, self-confidence and participation in learning. At the same time, digital technologies facilitate collaboration between students, promoting teamwork, solidarity and mutual respect as well as the development of educational and social justice (Ydo, 2020).

Furthermore, the combination of inclusive and digital technology contributes to the creation of a modern school that respects diversity, promotes equality and empowers all students, because "*every child has the right to quality education and learning and inclusive education is the most effective way to give all children a fair chance to go to school, learn and develop the skills they need to thrive*" (UNICEF). A school that is not limited to the transmission of knowledge, but cultivates life skills, critical thinking and social sensitivity, preparing tomorrow's active and responsible citizens for a democratic quality (Biesta, 2022).

Summarizing the review, the integration of digital technology in special and inclusive education is dictated both by the possibilities offered by technological developments and by the personal needs of students. Through the personalization of teaching, the digital tools can be adapted to the learning profile, learning pace and preferences of each individual, functioning as a flexible pedagogical tool (Liu, 2025). Therefore, technology is not just a technical tool, but an educational, learning, social and cultural tool, which can contribute decisively to the formation of conditions for active participation, productive employment and social inclusion of people with disabilities. In this formulation, "*multiple instructional strategies focusing on the UDL principles were utilized, to include web-based computer-mediated communication, web-based class management systems, interactions with technology and other participants, and a learning community. Overall, the findings revealed promising learning outcomes as supported by the existing literature regarding the effectiveness and practicality of UDL for students with and without disabilities at the postsecondary level*" (Burgstahler, 2008), but also at other levels of education (Messinger-Willman & Marino, 2010).

On the other hand, the contribution of digital technology to the health promotion of children with special needs is directly linked to the modern perception of health as a multidimensional concept, which includes physical, mental, emotional and social well-being (Li et al., 2025). In connection, health education and promotion emphasizes prevention (Ioannidi, 2006), empowerment, support and creation of opportunities for the adoption of healthy lifestyles (WHO, 2022). For example, assistive technology in all educational contexts and under the contribution of the Universal Design Process functions as a multi-layered tool (https://doit.uw.edu/brief/universal-design-process-principles-and-applications/):

- Access and accessibility,

- Interaction and interactivity,
- Feedback and assessment,
- Development of communication and social behavior skills,
- Adaptation and strengthening of emotional resilience,
- Improvement of quality of life and self-esteem, as well as
- Support for psychosocial rehabilitation.

Hence, the literature highlights the connection of Special and Inclusive Education with education for sustainability (Rončević & Rieckmann, 2025; Andersen et al., 2025), allowing the development of integrated interventions aimed at the equal participation of people with disabilities in social and economic life. The effective use of digital technology requires the design of coherent educational policies (see: https://www.researchgate.net/publication/365728778_Symperileptike_Politike_kai_Technologies_Aichmes_httpswwwyoutubecomlabautism_uomstreams), which will emphasize (Rojas et al., 2024; Toto et al., 2024; Barak & Shahab, 2023; Passey, 2015; Passey, 2013):

- the prevention of school failure,
- the implementation of personalized teaching approaches,
- the development of critical thinking,
- the training of teachers,
- the collaboration and communication of all parties involved,
- the creation of accessible and supportive learning environments, and
- the connection of education with the transition to adulthood.

Also, according to research data, it is noteworthy that the success of all students, regardless of their clinical and learning profile requires (https://www.european-agency.org/):

- Communication and collaboration between teachers and students,
- Appropriate teacher training,
- Equal access to digital media for all students,
- Addressing the digital divide,
- Developing practices and policies of inclusion for students with diversity, which is an obligation of an educational system and a prerequisite for their equal participation in social life.

In reality, the use of digital media in combination with research-based practices and universal learning design contributes to strengthening cognitive and communication skills, improving autonomy and self-regulation, fostering emotional empowerment and social inclusion, and promoting educational equality for the transition to adulthood. UDL is based on principles that empower everyone to have agency over their own learning. It allows educators and learners to set clear goals, anticipate environmental barriers, create meaningful options, and fully embrace human variability (https://udlguidelines.cast.org/). It is clear that the effective use of technology requires, however, the active role of the teacher, who is called upon to transform their teaching practices and integrate new technologies into a pedagogically documented and

collaborative framework (Basister et al., 2025) with the aim of building excellent learning outcomes (Misra, 2026).

UNESCO's Sustainable Development Goal 4 on education emphasizes inclusion and equity as the foundation for quality education (https://www.inclusive-education-in-action.org/). In this direction, digital technology can contribute substantially to the extent that the functional limitations faced by people with disabilities are taken into account and internationally recognized standards and procedures for accessibility are adopted. New digital technologies are not an end in themselves in the educational process but a tool, supporting appropriate, inclusive and sustainable pedagogical strategies (Pérez-Jorge et al., 2026). Nevertheless, the central role of teachers in expanding the possibilities of inclusion should be recognized, focusing on their continuous training in the new processes of digital technology. The development of inclusion practices and policies for students with diversity is an obligation of an educational system and a prerequisite for their equal participation in social and school life (Karakiozis & Papakitsos, 2022).

4. Discussion – Conclusion

It is important to underline that:

- In recent years, ICTs have been part of the developments in the learning environment and, in combination with innovative pedagogical concepts, result in the active attitude of students, the development of cognitive skills and their facilitating interaction between students and teacher (Ioannidis & Malafantis, 2024). Similarly, according to Milimo (2026), ICTs hold significant promise for advancing inclusive education. Moreover furthermore, as inclusive education refers to an educational setup where children with diverse learning needs are accommodated in general classroom and have equitable opportunities of quality education (Cook & Odom, 2013), assistive technology, when integrated into a psychopedagogically documented and socially sensitive educational framework, can act as a catalyst for the promotion of health and quality of life of children with special educational needs. However, at this stage, to ensure that a classroom is truly inclusive, the teacher and other professionals involved in supporting children with disabilities using assistive technology require appropriate knowledge and skills to bring potential to reality (Chambers, 2019). The success of such an undertaking depends on the collaboration of educators, families, scientific institutions and the state, as well as on the political will to invest in human and technological resources at the national, european and international levels.
- Therefore, the application of Information and Communication Technologies is a communication and learning tool in education, supporting the inclusion of students with and without educational needs in both traditional and digital learning environments (inclusion & e-inclusion). Given that the challenges of inclusive education are not unrelated to the potential role of learning methods in the pedagogical response to the needs of all those involved and in their inclusion

in the learning process (Reid, 2019), it becomes clear that the evolving pedagogical framework and the constantly evolving dynamic and more demanding role of the teacher, with the involvement of new digital technologies and digital media in their educational strategies (Sistek-Chandler, 2020) constitute fundamental structural components in the implementation of the work of inclusive education in virtual and physical teaching and learning environments. Thus, schools, teachers, and students are increasingly able to access and apply assistive technology to enhance inclusion within mainstream classrooms.

- At this point, inclusive and digital technology contribute to the creation of a modern school that respects diversity and empowers all students through inclusive pedagogies in practice (Florian & Beaton, 2018). A school that is not limited to the transmission of knowledge, but prepares students to become active and responsible citizens in a world of constant change. It is a fact that digital teachers are better placed to innovate and curate student learning with digital tools using differentiated lesson activities onsite and online with their learners (Grace et al., 2025). Digital competence in teaching is vital for ensuring educational quality in a technology-based context (Batanero et al., 2026).

In conclusion, this building bridges review has shown that the fields of inclusion, digital technology and health promotion of children with disabilities have substantial conceptual and functional connections in the educational context, with inclusion as a milestone. The synthetic analysis of the relevant literature has shown that digital technology can act as a lever for strengthening inclusive practices and promoting the health and well-being of children with disabilities in all educational contexts. Finally, health promotion emerges as a key dimension of inclusive education, broadening the concept of learning towards a holistic approach that takes into account the physical, mental and social well-being of all students. Overall, the review supports the need for a unified conceptual framework that connects inclusion, technology and health promotion, contributing both to the theoretical and applied development of educational research and to the design of sustainable and equitable educational practices.

Declaration of Conflicting Interests

The author declares no conflicts of interest.

About the Author

Dr. Vasiliki Ioannidi (PhD/Dr.phil.), PhD in Pedagogy, specialization: "Special Education", School of Philosophy, National and Kapodistrian University of Athens; Post Doc in Inclusive Education, School of Education, Department of Pedagogy and Primary Education, National and Kapodistrian University of Athens; CDP in Educational Sciences and Digital Education; Member of DHG, DGsP, HGS & ÖGKJP-Sektion Klinische Pädagogik; Author in Inclusive Pedagogies at Frankfurter Literaturverlag (Frankfurt A.M.-London, New York); Member of Think Tank "Intelligent Deep Analysis", E-Learning National and Kapodistrian University of Athens; Adjunct Faculty Member, Hellenic Open University & Open University of Cyprus.
Google Scholar: https://scholar.google.gr/citations?user=grILx-gAAAAJ&hl=el
Research Gate: https://www.researchgate.net/profile/Vasiliki-Ioannidi-2
ORCID: https://orcid.org/0000-0003-1792-5918

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