

DIGITAL TECHNOLOGIES AND NEW DIMENSIONS OF LEARNING

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Abstract: This article analyzes the role of digital technologies in education and their practical and social impact on learning. It explores how technologies influence different age groups as learning tools, highlights social disparities in digital adaptation, and examines the processes of practical experience and conceptual understanding. A critical approach is used to evaluate and deconstruct mythical perceptions about digital learning.

Keywords: digital technologies and education, learning process and technology, practical knowledge and digital tools, innovative technologies in education, digital devices, digital transformation in learning environments, autodidactic learning and technology, artificial intelligence, digital literacy.

Digital technologies, by their very nature, are a subset of information and communication technologies (ICT). As such, they are frequently considered ideal tools for educational purposes. Over the years, numerous studies in science and technology have explored how the internet and digital tools facilitate the creation and dissemination of knowledge. This dynamic unfolds not only within specific professional or academic communities but also across different social environments and boundaries [1]. Several studies emphasize the educational potential of digital tools as learning instruments. This is evident, for instance, among young people acquiring knowledge outside traditional classrooms – often in informal or alternative settings – and among adults engaging in self-directed or amateur learning activities. In many cases, such engagement serves as a way to compensate for previous difficulties encountered within the formal education system [2].

Thus, digital technologies are often subject to dual interpretations.

On one hand, they are praised as promising solutions to educational challenges – offering avenues for pedagogical innovation, personalized learning, greater autonomy, and more.

On the other hand, they can also be seen as sources of concern, particularly regarding how they alter our relationship with learning — including a potential decline in activities such as reading, or perceived competition with artificial intelligence.

Critical research in the field of education provides valuable insight into these trends by questioning and balancing the widespread “myths” surrounding the role of digital tools in the learning process [3].

One often overlooked aspect in both optimistic and pessimistic debates about the educational potential of digital technologies is that their use itself represents a form of learning engagement. Despite the wide variety of tools and ways to interact with them, a key shared feature among all digital technologies is their ability to reshape how we mediate our relationship with the world. In doing so, they embed this relationship within new social and technical environments — environments that must first be explored and understood through learning.

In introducing this thematic focus, we draw attention to the pervasive nature of learning in connection with digital technologies — both theoretically and practically — across all forms of social contexts. This broad perspective reflects the diversity and uniqueness of the approaches found throughout the

articles in this issue. Although the use of digital tools is widespread, the subject of learning through these technologies has rarely taken center stage in academic research.

The Ubiquity of Digital Technologies and Learning. As early as the 1980s, research revealed that digital learning extends beyond mere cognitive processes. Although using digital tools today may seem straightforward, a 2001 AOL advertisement in France pointed out that even basic navigation of the internet requires at least the ability to “click.”

Digital technology use is fundamentally a practical activity, and as such, it involves a strong experiential component [4]: learning primarily occurs through action and repetition. This is especially true for so-called “new” technologies, which initially spread within professional environments among already-employed workers.

Researchers have shown that individuals vary widely in how they adapt to and learn such tools. This variability often depends on two factors: the person's readiness and availability for learning, and – perhaps more importantly – their ability to make their acquired skills visible and transferable, allowing them to be used productively in other contexts.

Michel Gollac and Francis Kramarz emphasize that the use of computer tools in professional settings – where formal training is rarely provided – is strongly shaped by the user's social background. According to them, computers tend to be “user-friendly only for those who share the culture of their designers” [5].

The Design of Common Digital Devices and the Understanding of Technology. The design of mainstream digital devices follows a long-standing trend aimed at maximizing user-friendliness by concealing technical complexity. Graphical user interfaces and the closed ecosystems of mobile applications often give users the illusion that they are interacting directly with physical objects. As a result, users gradually lose awareness of the “instruction–process–result” sequence that was more visible in earlier command-line environments.

Nevertheless, the use of any digital device inevitably leads to the development of certain representations regarding its technical functioning. For instance, in a study conducted by Grugier [6], it was observed that preschool children, when introduced to screens in the classroom (such as tablets or interactive whiteboards), not only develop practical familiarity but also begin to form questions and conceptual understandings about how these technical devices operate.

Other studies have similarly demonstrated that, in the context of primary education, students' hands-on interaction with digital tools goes hand-in-hand with the evolution of their conceptual reasoning. This phenomenon has been observed through their engagement with computers, programmable robots, and humanoid robots.

The dual nature of digital learning – both physical and conceptual—has been observed not only among students using everyday tools in educational settings, but also among teacher-researchers engaging with tools such as email.

Learning often involves breaking away from established habits: for instance, letting go of instinctive responses to familiar interfaces in order to master new ones (such as transitioning from an Apple operating system to Microsoft), or abandoning certain bodily techniques to acquire alternative ones.

In this context, learning processes may also intersect with issues of innovation – particularly in relation to the phenomenon of path dependency, often discussed in innovation studies. This refers to how pre-existing structures shape the development of norms and standards associated with professional usage.

Adaptation to digital tools has now become an essential phase across various domains of activity – whether related to leisure time or structured obligations such as schooling, work, or daily tasks. Regardless of whether this learning accompanies initial processes of socialization or contributes to the evolution of particular practices, it occurs at all stages of life.

Children, in particular, are active participants in such learning trajectories. However, there may be tensions between the digital norms promoted by formal education and those shared among peers or transmitted within families.

At the university level, students are increasingly confronted with new demands and practices – such as the use of institutional digital platforms or academic email communication. Furthermore, as they enter the professional world, they are introduced to new tools or begin engaging with familiar technologies in novel, task-specific ways.

Conclusion. The integration of digital tools into distance education allows for effective implementation of the learning process in various formats – whether synchronous, asynchronous, or hybrid. However, to ensure high-quality educational outcomes, it is essential that all participants – especially those responsible for planning and delivering instruction – possess specific professional competencies tailored to digital teaching environments.

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