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RECEIVED 28 July 2025  
ACCEPTED 06 August 2025  
PUBLISHED 01 September 2025

CITATION  
Gutierrez-Aguilar O (2025) Editorial: Trends in  
the digitization of education: approaches,  
innovations and scenarios.  
*Front. Educ.* 10:1674769.  
doi: 10.3389/feduc.2025.1674769

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# Editorial: Trends in the digitization of education: approaches, innovations and scenarios

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## KEYWORDS

editorial, education, innovation, approaches, learning

## Editorial on the Research Topic

[Trends in the digitization of education: approaches, innovations and scenarios](#)

## Introduction

In recent years, the landscape of education has undergone a profound transformation catalyzed by the accelerating wave of digitisation. The COVID-19 pandemic served as a global inflection point, prompting institutions to reconfigure their pedagogical strategies, technological infrastructures, and professional practices. However, beyond this initial urgency lies a more enduring challenge: how do we conceptualize, implement, and sustain meaningful digital education? This Research Topic, “*Trends in the digitization of education: approaches, innovations and scenarios*,” explores precisely that question through seven scholarly contributions that reveal the layered complexity and promise of educational digitisation.

## Rethinking digitisation as a multidimensional phenomenon

Contrary to reductive views that treat digitisation as merely the infusion of devices or platforms into the classroom, the works gathered in this volume underscore its conceptual and operational plurality. Educational digitisation unfolds as a multifaceted phenomenon, bridging pedagogy and technology, enabling new forms of assessment and engagement, and—perhaps most critically—demands a socially conscious response to inclusion, equity, and access.

Grounded in robust theoretical frameworks and empirical research, these contributions advance our understanding of digitisation as an evolving ecosystem rather than a static toolkit. As noted by [Maddison et al.](#), [Pegalajar Palomino and Rodríguez Torres](#), and [D’Elia et al.](#), digital education must be seen as an interplay of strategies, innovations, and adaptive responses to shifting social and institutional contexts.

## Approaches rooted in collaboration and field responsiveness

A first thematic thread in this Research Topic is the emergence of *collaborative and field-based approaches* to digital education. Digital learning, in this view, is not a top-down delivery system but a co-constructed experience shaped by active participation. [Maddison et al.](#) demonstrate how mobile technologies empower students to engage in real-world learning experiences beyond the confines of the classroom. This mobility facilitates the design of situated, context-aware instruction—a key attribute in both urban and rural settings.

Similarly, [D'Elia et al.](#) explore how problem-based and cooperative frameworks elevate learning by foregrounding shared responsibility and practical engagement. These approaches not only deepen cognitive involvement but also address diversity by accommodating different learner profiles and needs. The inclusion of service-learning elements within digital ecosystems, especially in work with students with disabilities, provides compelling evidence that educational digitisation can serve as a vehicle for equity when grounded in inclusive design principles.

## Innovation in assessment and engagement

A second major trend lies in the *innovation of assessment practices and student engagement strategies*. [Correcher et al.](#) introduce a novel model in which social media and short-form videos serve not merely as content delivery tools but also as mechanisms for self-expression, peer feedback, and motivational enhancement. By reconceptualising assessment as participatory and creative rather than procedural and static, the authors suggest that digital media can reinvigorate student agency and broaden the evaluative landscape.

Gamification, too, finds fertile ground in these discussions. As shown by [Anane](#), tools such as *Kahoot!* Effectively heighten learner motivation and participation in language learning contexts. Despite implementation challenges, the power of game mechanics to foster emotional engagement and enjoyment presents promising pathways for the future of teaching and learning—especially in populations previously disengaged from traditional instruction.

## Competency development and digital professionalism

Digitization is not solely a matter of infrastructure or content but also of *human capacity*. [Moreira-Choez et al.](#) and [Shambare and Jita](#) emphasize the urgent need for comprehensive faculty development and systematic competency evaluation. The use of structural equation modeling to assess digital proficiency among educators provides a methodological lens into the interconnected nature of informational, communicative, and creative competencies.

However, digital competency is unevenly distributed. The TPACK framework, as applied by [Shambare and Jita](#),

illustrates how rural educators often possess strong pedagogical foundations yet face gaps in technology integration. This situation highlights the systemic barriers that hinder full participation in the digital transition and underscores the importance of institutional investment in localized, ongoing professional development programs.

[Pegalajar Palomino and Rodríguez Torres](#) further extend the focus to pre-service teacher education, identifying persistent gender-based disparities in digital confidence and usage. This finding calls for tailored interventions to close skill gaps and promote digital equity—not only as a matter of individual growth but also as a structural imperative for quality education.

## Contextual scenarios: equity, access, and inclusion

Digital transformation does not occur in a vacuum. It is mediated by various contexts, including geographical, cultural, infrastructural, and socio-political. The scenarios explored in this Topic articulate a shared concern for *context-sensitive implementation* of digital tools, especially in environments marked by inequality. From under-resourced rural schools to students with disabilities and marginalized communities, the promise of digitisation is contingent upon the deliberate orchestration of inclusive strategies.

Whether through designing courses that address accessibility, training teachers in responsive pedagogies, or equipping institutions to bridge the digital divide, inclusion emerges as a cross-cutting principle across all contributions. Indeed, one of the key takeaways from this Research Topic is that technological advancement, if left uncritically adopted, can reproduce or even deepen pre-existing inequalities. However, when aligned with values of justice and participation, digitisation becomes a transformative force for good.

## Synthesis and implications for the future

Taken together, the seven articles converge on three integrative trends:

1. **Co-production and mobility in digital learning:** from mobile labs to student-designed curricula, learning becomes an interactive, socially situated activity ([Maddison et al.](#); [D'Elia et al.](#)).
2. **Assessment as engagement:** innovative practices, including social media-based assignments and gamification, reframe how learning is measured and internalized ([Correcher et al.](#); [Anane](#)).
3. **Systematic digital competency building:** faculty and pre-service teacher development play a pivotal role in sustaining long-term digital transformation ([Moreira-Choez et al.](#); [Shambare and Jita](#); [Pegalajar Palomino and Rodríguez Torres](#)).

The overarching conclusion is clear: the digitisation of education must be approached as an inclusive, participatory, and evolving process. This Research Topic provides critical insights into

how digital education can thrive when pedagogical innovation is matched by strategic vision and ethical commitment.

As education systems worldwide continue to navigate the aftermath of the pandemic and the persistent pressures of globalization and technological change, these findings offer a compass. A compass that points toward a future where digital tools are not simply add-ons to existing structures but catalysts for reimagining the very nature of teaching itself.

## Author contributions

OG-A: Conceptualization, Writing – original draft, Writing – review & editing.

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