Editorial

Designing Flexible Learning for Digital Education: framework, contributions from the FLeD project, and emerging perspectives

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The growing digitalization of higher education, intensified by the COVID-19 pandemic, has made evident the need for pedagogical models capable of responding to the diversity of students, contexts and learning trajectories. In this scenario, flexible pedagogies have established themselves as a central reference for learning design in digital, hybrid and open contexts, shifting the focus from technology as an end to an approach centred on the student, inclusion and pedagogical intentionality.

Flexible learning enables educators and students to purposefully adapt elements of the learning experience—such as time, space, pace, resources, interaction, assessment, and feedback—while ensuring coherence with educational goals. This perspective implies a repositioning of the teacher's role as a designer and mediator of learning, as well as the recognition of the student as an active agent in their educational journey, promoting more self-regulated, participatory and meaningful learning processes (Afonso et al., 2025).

It is in this context that approaches such as hybrid teaching and flipped learning assume relevance. By redistributing time and roles, these approaches enhance active learning, personalization of learning paths and the intentional use of digital environments but require a structured and theoretically grounded pedagogical design.

It was precisely to address this challenge that the **Flexible Learning Design for Digital Education (FLeD)[4]** project was created. FLeD embraces flexibility as an intentional process of learning design, articulating pedagogical innovation, educational technology, inclusion, and teacher professional development (Afonso et al., 2025) and proposes a flexible learning by design approach, integrating pedagogical principles, design

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standards, mechanisms to support teacher decision-making, and training strategies aimed at developing teachers' digital and pedagogical skills.

The scientific contributions of the project highlight the articulation between theory, practice and training (Albó et al., 2024; Afonso et al., 2025; and Ballardini et al., 2025). It is in this conceptual and empirical context that the present Thematic Dossier is inserted.

The call for papers sought to gather contributions that explored the design, implementation, and evaluation of flexible learning models for digital education, focusing on dimensions such as student voice and agency, feedback and assessment, inclusion and accessibility, technological innovation, and pedagogical mediation.

The articles in this thematic dossier address these issues from complementary perspectives. With an international focus, the articles now published represent ongoing dynamics and reflections from the community of researchers and teachers in countries such as Brazil, Spain, Costa Rica, Mozambique, and Portugal.

The article *Students' perceptions and views on the ULATINA hybrid model* analyses students' experiences in a hybrid teaching context, valuing their voice as a central element in the evaluation and improvement of pedagogical models.

In *Explainable Artificial Intelligence (XAI) and Human-in-the-Loop (HITL): Technology and Teacher Mediation in Formative Feedback*, the integration of artificial intelligence into feedback processes is critically discussed, advocating approaches that preserve the teacher's pedagogical mediation.

The article *Individualized and Written Feedback: Configuration and Functionality* focuses on the role of feedback as a structuring element of flexible learning, highlighting its contribution to self-regulation and the personalization of learning paths.

Finally, *The path of Universal Design for Learning in Brazilian scientific production from 2017 to 2023: from theory to practice* presents a literature review that highlights the consolidation of UDL as a benchmark for the design of inclusive educational environments.

Taken together, the contributions gathered in this Thematic Dossier show that the design of flexible learning for digital education is a complex and intentional pedagogical process. More than a circumstantial response to emergency contexts, flexibility emerges here as a sustained orientation for designing more inclusive, adaptable and learning-centred educational experiences, hence contributing to the scientific and pedagogical debate on the future of higher education in digital contexts.

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