International Conference of Advanced Research in Education

12 - 14 December 2025 Cambridge , United Kingdom

Students' Fragmented and Distributed Attention in Cognitive Ecologies

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Abstract

This study investigates how in-service teachers perceive emerging changes in students' attentional functioning within contemporary hybrid learning environments. Grounded primarily in Laurillard's pedagogical framework, which conceptualizes learning as an iterative and interactive process between teacher, learner, and task design, the research employs mixed-methods action research design. Data were collected from teachers across multiple Italian school levels using a 10-item Likert scale (? = .95) and an open-ended prompt. Quantitative analyses included descriptive statistics, PCA, and extended multiple regression, while qualitative data were examined through thematic analysis (Braun & Clarke, 2006).

Findings indicate a strong convergence among teachers: students exhibit fragmented and intermittent attention, increased cognitive fatigue, and a heightened need for methodological alternation to sustain engagement—an aspect fully consistent with Laurillard's emphasis on varied mediating representations and iterative learning cycles. PCA revealed two latent dimensions: (1) perceived effectiveness of methodological alternation, and (2) attention–motivation patterns across onlife contexts. Regression results highlight the predictive role of training in digital pedagogy and AI literacy. Qualitative insights further describe emotional saturation, embodied signs of overload, and the ambivalent role of technologies.

Importantly, these empirical results corroborate Ardizzi's (2024) neurocognitive hypothesis of attention, confirming that teachers recognize attentional patterns consistent with neuroplastic adaptation to high-density digital environments. In the implications, the study is interpreted through Floridi's (2014) onlife perspective, which frames attention as embedded within algorithmically mediated cognitive ecologies.

The study proposes a Didactic Model integrating Laurillard's framework with cognitive load theory, multimedia learning, neuro-education, relational pedagogy, and AI literacy. It contributes an evidence-informed, neuro-pedagogical understanding of attention in the algorithmic era and offers actionable recommendations for teaching, policy, and future research.

Keywords: Teachers; teaching model; fragmented; engagement