

## Neuroeducation and Knowledge Ecology: an Emerging Perspective from Complexity

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### ABSTRACT

Currently, education faces the challenge of redefining its meaning to adapt to the needs of an environment marked by uncertainty, diversity, and rapid social and technological evolution. Therefore, the objective of this article is to determine the relevance of a transdisciplinary, holistic, and contextualized model of neuroeducation aimed at transforming educational processes from an ecological perspective of knowledge and complexity. Methodologically, a documentary analysis and a systematic review of scientific studies and recent literature on neuroeducation, knowledge ecology, and complexity were carried out, allowing for the interpretation of the approaches and the establishment of relationships between them. This analysis highlights the challenges of interoperability between neuroeducation and knowledge ecology from complex perspectives, given that these integrations allow for the proposal of more contextualized, relevant, and inclusive educational practices. However, they still face challenges such as the ecological validity of the categories investigated and the application of scientific discoveries to the classroom. However, they agree that the neuroapproach supports the understanding of learning through brain plasticity, emotional influence, and environmental cultivation, indicating that approaching learning from the ecology of knowledge provides a more realistic view of systems, facilitates the understanding of cognitive development, and guides toward transdisciplinary and critical pedagogies. Strategies are proposed to move toward non-reductionist integration: transdisciplinarity, the interweaving of diverse educational currents with non-reductionist sciences, and the system as a theoretical framework that encompasses all sciences; confirming that learning is as multiple as the biopsychosocial nature of the learner, and that this is the most effective way to enrich the understanding of this complex process and improve education.

**Keywords:** Neuroeducation, complex thinking, ecology of knowledge, neuroplasticity, teacher training.

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