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Perspectives of Lifelong Learning in Digital Environment

Extended summary

As much as learning changes under the influence of new technologies, learning itself changes the digital environment in which it takes place, leading to further adaptations within the human-machine interaction. The impact of digital technologies involves the creation of learning content, the assessment and evaluation of learning outcomes, and, in some cases, the complete control over key learning processes— including mediation in the teacher/facilitator-learner relationship. This paper focuses on essential aspects and theoretical foundations that define the conditions for enabling lifelong learning in a digital environment.

Learning today is essentially a continuous process that involves the deliberate use of available knowledge resources and the appropriate application of technology-supported procedures. In a digital context, what matters more than long-term memory is higher-order thinking, including critical and creative thinking. For digital education to truly foster critical thinking, it is crucial to question its market-driven logic and open up democratic dialogue around educational policy.

To ensure the comprehension of digital content, it is necessary to move away from perceiving learners as passive consumers of knowledge enabled by digital technologies. Instead, learners should be empowered to become active participants in the creation and sharing of knowledge—with support from the state and social institutions. For example, users of online and web-based tools, essential for online learning, should also be involved in their creation. Just as teachers and learners adapt to digital learning environments, they must also take part in

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shaping them through mutual engagement, exchange, and collaboration. A digital learning environment must, therefore, be collaborative. From this perspective, the technological features of platforms and learning management systems become vital, especially those that are designed to promote high levels of participant interaction.

Connectivism is a learning theory (Downes, 2010) that presents a model aligned with a fundamental shift in contemporary society, where learning is no longer viewed as an internal, individual process. Instead, it promotes group learning, where the ability to connect with others through digital networks and environments becomes a necessity of the modern age. According to connectivism, knowledge, and learning are distributed—they are not located in a single place, but consist of a network of connections formed through experience and interaction with a community.

As we increasingly learn and interact in stimulating digital environments, such as virtual reality, new questions arise about the nature and outcomes of these learning experiences—whether perceptual, intellectual, or emotional. These questions demand prior reflection on how the features of digital environments interact with human cognitive capacities—and, more precisely, their limitations. Cognitive Load Theory, an instructional design theory, is grounded in an understanding of human cognitive architecture. It emphasizes the limitations of our cognitive system, especially concerning the capacity, duration, and functioning of working memory, as well as the interaction between working memory and long-term memory (Sweller, 2011).

A paradigm shift in lifelong learning is neither simple nor optional—it is necessary. This applies to all forms and contexts of learning. It includes recognizing skills essential for effective learning in digital environments, especially those acquired outside formal education systems, as well as their initial or further development through formal, non-formal, academic, or professional educational pathways.

In conclusion, we propose the following recommendations for effective online teaching: Create an ideal space for digital learning through dialogue; Emphasize higher-order thinking; Develop collaborative learning environments; Base lifelong learning in digital contexts on the principles of connectivism; Redefine the concept of digital literacy; Develop pedagogy grounded in social knowledge and collaborative intelligence; Overcome the dichotomy between traditional and digital learning environments.

Keywords: lifelong learning, hybrid education, new technologies, digital learning environ¬ment, paradigm shift

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