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The Impact of Artificial Intelligence on Human Interaction and Cognitive Change: A Senge's Mental Models Framework in Higher Education Institutions in the UAE

Dr. Enass Khalil Ibrahim¹, Dr. Shima Ezzat Basha², Hay Thabet³

University of Fujairah, United Arab Emirates

Abstract

Artificial Intelligence (AI) has sped up the modernization of educational environments by transforming human interaction and intellectual growth in institutions of higher learning. In the United Arab Emirates (UAE), where digital innovation is strongly encouraged, AI is rapidly becoming central to teaching, learning, and institutional operations. However, as AI offers efficient tools of personalization, collaboration, and automation, their use also erodes human connections, critical thinking, and cognitive flexibility. This paper analyzes the impact of AI technologies on human interaction and cognitive change in UAE higher education, applying Peter Senge's Mental Models Framework as the guiding lens.

The research investigates how AI systems transform communication patterns between students, teachers, and administrative personnel and how the same impact internal assumptions, perceptions, and cognitive processes of individuals. Senge's Mental Models emphasize that assumptions drive human behavior and learning patterns. With AI technologies increasingly mediating learning experiences, mental models must be altered to facilitate moral, innovative, and socially responsible interaction with technology. This article emphasizes the dangers of mental stagnation, dependence on algorithmic results, and decreased face-to-face interaction, as well as the promise of AI to augment problem-solving and interdisciplinarity.

The research concludes by providing suggestions for policymakers and higher education leaders in the UAE to build adaptive and adaptable institutional cultures. These suggestions aim at reshaping mental models in accordance with technological developments and human-centered educational values. This study contributes new findings to the existing debate on the role of AI in cognitive change and its effects on human interaction in higher education.

Keywords: Artificial Intelligence, mental models, higher education, UAE, Senge's framework