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Editorial

AI and the Clark-Kozma Debate: A Reflection on Instructional Technology in Online Graduate Education

Laurie Bedford, PhD
National University

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The Clark-Kozma debate refers to a seminal discussion in the field of instructional technology between Richard Clark and Robert Kozma in the 1990s, focusing on the role of media in learning. Clark (1983) argued that media are mere vehicles that deliver instruction but do not influence learning. Clark suggested that any learning gains attributed to media resulted from the instructional methods rather than the media themselves. Kozma (1991) countered that media and technology influence learning, altering how knowledge is processed and understood. Kozma posited that the interaction between media, content, and learners creates learning opportunities that would not be possible otherwise. In other words, Kozma argued that media transforms the learning environment itself.

Artificial intelligence (AI) is situated within this debate as a form of instructional technology. It encompasses a range of tools and applications, from intelligent tutoring systems and adaptive learning platforms to automated grading systems and natural language processing (Harry & Sayudin, 2023). In recent years, the availability and application of AI have increased exponentially across disciplines. AI's increasing use in education raises important questions about whether it, like other instructional technologies, is simply a tool for delivering instruction or is transforming the learning landscape.

Aligning with Kozma's argument, as a vehicle to create new learning opportunities, AI-enhanced instruction would be viewed as fundamentally changing how learning happens (Luckin et al., 2016; Onesi-Ozigagun et al., 2024). In contrast to traditional classrooms in which content creation is time-consuming, static, and generalized, AI can generate customized learning materials, including quizzes, multimedia presentations, case studies, or assessments based on the specific needs of individual students and aligned with learning outcomes. This view centers on AI's ability to act as a third-party facilitator of learning, transforming the learning environment

to one in which technology plays a foundational role in the relationship between the student and faculty member. It also raises questions about a relational triad in which technology is seen as an equal partner in learning.

Another perspective aligns with Clark's position, which posits that AI is merely another tool to use in the educational environment. Therefore, its effectiveness will always depend on the underlying pedagogical approaches rather than the technology itself (Selwyn, 2019). From this viewpoint, AI is seen as an extension of traditional instructional pedagogical strategies. Using this rationale, it could be argued that an AI system that delivers poorly designed content is unlikely to yield positive learning outcomes, just as traditional methods would fail under similar circumstances. This perspective challenges the notion that AI inherently improves education (Machajewski, 2024).

The introduction of AI into education has been met with both enthusiasm and skepticism, which mirrors the historical introduction of other instructional technologies. Some might recall that introducing computers as an instructional tool was accompanied by claims that it would revolutionize teaching and learning. Early advocates argued that computers could offer personalized learning experiences, enhance engagement, and improve educational outcomes. However, as with AI, the initial optimism was tempered by concerns about the actual impact of computers on learning outcomes (Kimmel & Deek, 1995). Critics pointed out that merely introducing computers into the classroom did not automatically lead to better educational outcomes. Rather, aligned with Clark's arguments, they argued that its effectiveness depended largely on the instructional methods employed and the extent to which teachers and learners could leverage the technology's potential (Simões et al., 2022).

Similarly, the emergence of online learning in the late 1990s and early 2000s also generated excitement and debate. Some viewed online learning as a positive, transformative educational force, offering unprecedented access to programs and learning opportunities. Yet, as with previous technologies, the effectiveness of online learning depended on how well it was integrated into instructional design. Many studies demonstrated that while online learning could be as effective as traditional face-to-face instruction, this equivalency was achieved only when sound pedagogical principles were applied (Ramage, 2002), as Clark would have likely pointed out.

While the Clark-Kozma debate continues in some academic circles, it has mostly been resolved by conceding that the success of any educational technology is a balance between its inherent capabilities and the quality of its implementation. The parallels between AI and other educational technology seem clear and might be assumed to be resolved in the same manner. However, the debate about whether AI is a mere tool or a transformative force remains critical within the context of online graduate education. Online graduate programs often serve diverse and geographically dispersed student populations, making AI's potential for personalization and scalability especially attractive. Artificial intelligence can provide online graduate students with individualized learning experiences, offering support and feedback tailored to their needs and progress. This can be particularly beneficial in a setting where students may have varying levels of prior knowledge and experience, as well as differing schedules and learning paces (George, 2023).

Moreover, AI can empower students to take an active role in their learning (Ouyang & Jiao, 2021). In online graduate education, this can address some of the challenges associated with remote learning. For example, AI-driven discussion platforms can facilitate real-time,

meaningful student interactions, fostering a sense of community and collaboration often challenging in online environments. Using AI for these purposes has the potential to enhance interaction and engagement for online graduate students in innovative and exciting ways. From the faculty perspective, AI can support instructors by automating administrative tasks, such as grading and tracking student progress, allowing them to focus more on providing personalized guidance and support directly to students (Felix, 2020).

Because of the time and distance separation between faculty and students, AI has the potential to effectively become the primary tool for delivering content to online graduate learners. However, there is a risk that content curated and created this way could become overly standardized and mechanized. Emerging platforms can provide real-time feedback, remediation, and discussion facilitation but cannot replicate the nuanced, human aspects of teaching and learning that are vital at the graduate level. AI-enhanced learning can create more dynamic and responsive educational environments, but it may be at the expense of trusting compassionate teacher-student relationships.

The Clark-Kozma debate is a compelling reminder to all stakeholders that the value of AI in online graduate education, as in any educational context, lies not in the technology itself but in how it is used. The effectiveness of AI depends on thoughtful integration into instructional design, informed by a deep understanding of the learning process and the specific needs of online graduate students. As AI continues to evolve and become more sophisticated, it is crucial to remain vigilant about its impact on education, ensuring that it enhances, rather than diminishes, online graduate education quality.

References

Clark, R. E. (1983). Reconsidering research on learning from media. *Review of Educational Research, 53*(4), 445–459. https://doi.org/10.3102/00346543053004445

Felix, C. V. (2020). The role of the teacher and AI in education. In *International perspectives on the role of technology in humanizing higher education* (pp. 33–48). Emerald Publishing Limited. htpps://doi.org.10.1108/S2055-364120200000033003

George, A. S. (2023). The potential of generative AI to reform graduate education. *Partners Universal International Research Journal*, *2*(4), 36–50. https://doi.org/10.5281/zenodo.10421475

Harry, A., & Sayudin, S. (2023). Role of AI in education. *Interdisciplinary Journal and Humanity*, *2*(3), 260-268. https://doi.org/10.58631/injurity.v2i3.52

Kimmel, H., & Deek, F. E. (1995). Instructional technology: A tool or a panacea?. *Journal of Science Education and Technology*, *4*, 327-332. https://doi.org.10.1007/BF02211265

Kozma, R. B. (1991). Learning with media. *Review of Educational Research, 61*(2), 179–211. https://doi.org/10.3102/00346543061002179

Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). *Intelligence unleashed: An argument for AI in education.* Pearson Education.

Onesi-Ozigagun, O., Ololade, Y. J., Eyo-Udo, N. L., & Ogundipe, D. O. (2024). Revolutionizing education through AI: A comprehensive review of enhancing learning experiences. *International Journal of Applied Research in Social Sciences*, *6*(4), 589-607. https://doi.org/10.51594/ijarss.v6i4.1011

Ouyang, F., & Jiao, P. (2021). Artificial intelligence in education: The three paradigms. *Computers and Education: Artificial Intelligence*, *2*, 100020.

Machajewski, S. (2024). *AI instructional framework: A comprehensive approach to learning with AI.* University of Chicago. https://doi.org/10.13140/RG.2.2.31742.80966.

Ramage, T. R. (2002). "The "No Significant Difference" phenomenon: A literature review. *Open Journal of Social Sciences, 9*(9). http://spark.parkland.edu/ramage_pubs/1

Selwyn, N. (2019). What's the problem with learning analytics? *Journal of Learning Analytics, 6*(3), 11–19. https://doi.org/10.18608/jla.2019.63.3

Simões, S., Oliveira, T., & Nunes, C. (2022). Influence of computers in students' academic achievement. *Heliyon, 8*(3), e09004. https://doi.org/10.1016/j.heliyon.2022.e09004

