DESIGNING A HYBRID LEARNING ENVIRONMENT: SYNERGY OF MICROLEARNING AND INTERACTIVE ENGAGEMENT TOOLS

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Abstract. The article explores mechanisms for increasing pedagogical efficiency in hybrid learning. The author proposes a model based on the synergy of asynchronous microlearning and interactive synchronous sessions. Methods for managing cognitive load and forming “social presence” are considered.

Key words: hybrid learning, microlearning, instructional design, student engagement.

Annotatsiya. Maqolada gibrid ta’limda pedagogic samaradorlikni oshirish mexanizmlari tadqiq etiladi. Mualif asinxron mikrota’lim va interaktiv sinxron sessiyalar sinergiyasiga asoslangan modelni taklif qiladi. Kognitiv yuklamani boshqarish va “ijtimoiy mavjudlikni” shakllantirish usullari ko’rib chiqiladi.

Kalit so’zlar: gibrid ta’lim, mikrota’lim, pedagogik dizayn, talabalar faolligi.

Аннотация. В статье исследуется механизмы повышения педагогической эффективности в гибридном обучении. Автор обосновывает модель, основанную на синергии асинхронного микрообучения и интерактивных синхронных сессий. Рассматриваются методы управления когнитивной нагрузкой и способы формирования «социального присутствия».

Ключевые слова: гибридное обучение, микрообучение, педагогический дизайн, вовлеченность.

Introduction

The modern Higher education system is undergoing a global transformation, shifting from emergency remote teaching to the systematic implementation of hybrid models. Hybrid learning, which involves a flexible combination of in-person classroom attendance and digital technologies, is becoming a key quality standard in leading global universities. However, recent practices have shown that the mechanical duplication of traditional lecture formats into the digital environment (the so-called “talking head” effect in Zoom) demonstrates extremely low pedagogical efficiency.

The relevance of this study is driven by the need for new didactic solutions capable of bridging the “digital gap” between the volume of transmitted content and the actual cognitive resources of students. In an era of information overload, the teacher’s primary task is no longer just the transfer of knowledge, but the design of an environment that facilitates attention retention and the formation of deep motivation.

The theoretical foundation of this work is based on R.Mayer’s Cognitive theory of multimedia learning and the concept of Social presence**(Garrison, 1999).** The aim of this article is to substantiate and describe an instrumental design model where efficiency is achieved through the synergy of two key mechanisms: microlearning for theoretical mastery and interactive technologies for developing practical competencies.

Methods

To achieve the stated objective, there was developed a “dual-circuit instructional design” model, which includes the following stages and methods: 1. Designing the

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asynchronous circuit (microlearning); 2.Designing the synchronous circuit (interactive engagement).

1. The pedagogical framework of this study adopts microlearning as the primary mechanism for the transmission of theoretical knowledge, systematically decomposing complex educational content into discrete, logically autonomous modules. Each unit integrates a concise video lecture(**Mayer,2020)** limited to a five-to-eight-minute duration and focused on a single specific concept, with a robust system for immediate knowledge verification through embedded quizzes and strategic checkpoints.

This structure operationalizes the principle of instructional adaptability, enabling learners to navigate the material at an individualized pace while significantly mitigating cognitive overload through the granular delivery of information.

2. In this model, synchronous sessions are entirely freed from the transmission of “passive” knowledge. The main focus is on social facilitation and collaborative activities. This interactive framework is operationalized through several key strategies. First, the systematic utilization of breakout rooms allows students to work in small groups of three to five, specifically targeting case studies to stimulate horizontal communication and peer-to-peer learning. Second, visual collaboration is facilitated through joint design on cloud-based platforms such as Miro or Padlet, which enables the externalization and visualization of collective thinking processes. Finally, the integration of instant feedback tools, including Mentimeter and Poll everywhere, provides a mechanism for rapid polling and real-time reflection. Together, these elements transform the synchronous environment into a dynamic space for active knowledge construction rather than simple information reception.

Result

The implementation of this instructional model demonstrated substantial improvements across several key educational metrics. Learning Management System (LMS) analytics indicate a content completion rate of 92% for micro-learning modules, a stark contrast to the 18% completion rate observed in traditional long-form video lectures (45-90 minutes).

Furthermore, the model significantly enhanced social dynamics and collaborative engagement. By leveraging small-group configurations, student participation in academic discussions rose from a baseline of 12% in traditional formats to 78%. Qualitative feedback suggests this shift is partly due to a reduction in psychological barriers, as the digital environment fosters a safer space for academic expression **(Garrison, 1999).**

Ultimately, the model facilitates a "seamless" educational experience by effectively bridging the divide between theoretical knowledge and practical application. This is achieved through an integrated flipped-classroom approach **(Betgmann & Sams, 2012)**: the asynchronous micro-learning component functions as a mandatory "entry ticket," ensuring that students are sufficiently prepared to engage in high-level, interactive synchronous workshops.

Discussion

The analysis of the empirical data suggests that pedagogical efficiency in hybrid education is predicated not upon the inherent technical capabilities of digital platforms, but rather upon the strategic and balanced distribution of the cognitive workload across various instructional formats**(Means,2013)**. A central point of academic contention remains the depth of subject immersion; specifically, critics of microlearning often highlight the risk of knowledge fragmentation. However, current pedagogical experience demonstrates that such fragmentation is effectively mitigated during the stage of interactive engagement. At this juncture, disparate modules of information are synthesized into a holistic conceptual

framework through the execution of applied tasks and problem-solving. This paradigm shift in the educator's role-transitioning from a traditional "lecturer" to an "instructional designer" and "facilitator"-necessitates the development of advanced digital competencies within the academic community. Furthermore, it is essential to recognize that interactive tools in this context do not serve an aesthetic or entertainment function; instead, they operate as "cognitive scaffolds" that enable students to maintain focus and achieve cognitive presence within a distributed learning environment.

Conclusion

The study demonstrates that pedagogical efficiency in a hybrid learning environment is achieved through the strategic synergy of asynchronous microlearning and interactive synchronous sessions. By decomposing theoretical content into discrete, autonomous modules, the microlearning circuit effectively manages cognitive load and results in a 92% completion rate, significantly surpassing the performance of traditional long-form lectures. The liberation of synchronous sessions from passive knowledge transmission allows for a focus on social facilitation and collaborative activities, which increases student participation from 12% to 78%. While critics highlight the potential for knowledge fragmentation in micro-formats, the interactive stage serves as a synthesis point where disparate information is integrated into a holistic conceptual framework through applied problem-solving. Ultimately, this model necessitates a transition in the educator's role from a lecturer to an instructional designer, utilizing digital tools as cognitive scaffolds to bridge the gap between theoretical mastery and practical application within a distributed learning environment.

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