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Implementing Notebooklm as an AI-Supported Asynchronous Learning Tool in Higher Education: Insights from A 12-Week Exploratory Pilot

Marcus Sanger, Sfhea, Dr. Humaira Khan
Health Sciences University, Bournemouth, United Kingdom

Abstract

The rapid emergence of generative artificial intelligence (AI) presents new opportunities to enhance teaching and learning within higher education, yet evidence regarding its implementation in authentic educational settings remains limited. This exploratory 12-week pilot investigated the integration of NotebookLM as an AI-supported asynchronous learning tool within a Level 6 undergraduate Sport Rehabilitation unit. Embedded within the Virtual Learning Environment (VLE), NotebookLM formed part of a structured learning pathway designed to support students' preparation for practical laboratory-based teaching. Informed by Cognitive Load Theory, the study explored students' digital confidence, perceptions of AI, motivation, cognitive load, and experiences of using the platform through anonymous baseline, mid-unit, and end-of-unit questionnaires incorporating both quantitative and qualitative responses. Students reported that NotebookLM enhanced understanding of complex concepts, improved access to and organisation of learning resources, and supported independent study through features such as conversational questioning and multimedia summaries. Participants also perceived reductions in the effort required to prepare for practical sessions, suggesting a reduction in extraneous cognitive load. However, concerns regarding AI accuracy, information overload, and technical limitations were also identified. Although the small cohort limits generalisability, the findings provide valuable insights into the practical implementation of AI-supported learning tools and highlight important considerations for integrating generative AI into higher education curricula.

Keywords: Artificial intelligence in education; Cognitive Load Theory; Generative AI; Higher education; Virtual learning environment