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An Exploratory Study of Artificial Intelligence Use Across Disciplines at The Undergraduate Level: Experiences of Students and Lecturers

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Abstract

Artificial intelligence (AI) is increasingly transforming higher education by creating new possibilities for teaching, learning, and student engagement. However, its integration into undergraduate education also raises important questions concerning pedagogical applications, practical challenges, and responsible use across academic disciplines. This study explores the use of AI tools and models in undergraduate teaching and learning at one branch of the University of Technology and Applied Sciences (UTAS), Oman. Specifically, it investigates how students and lecturers use AI technologies, examines the challenges they encounter, and identifies opportunities and strategies for enhancing their effective integration into higher education. The study adopts a qualitative research approach to gain an in-depth understanding of participants' experiences and perspectives. Data were collected through semi-structured interviews with 19 lecturers and eight student focus group discussions, each involving four undergraduate students, resulting in a total of 32 student participants. The data were analyzed thematically to identify patterns in AI adoption, perceived benefits, challenges, and recommendations for practice. The findings indicate that the majority of informants use AI tools almost daily in their teaching and learning practices, highlighting the growing integration of these technologies into undergraduate education. However, time constraints emerged as the most frequently reported challenge among lecturers, followed by concerns about students' critical thinking skills and academic integrity. Students, in turn, expressed concerns about similarity checks and uncertainty regarding the extent to which AI-generated content can be used in their academic work. These findings highlight the need for clear institutional guidelines, effective pedagogical strategies, and greater awareness of the responsible use of AI in academic contexts. By examining the experiences of both lecturers and undergraduate students, this study provides context-specific insights into the evolving role of AI in higher education in Oman. It aims to inform institutional policies, teaching practices, and student support initiatives that promote pedagogically sound, responsible, and effective AI integration. The study is relevant to educators, higher education leaders, and policymakers seeking to harness the potential of AI while addressing the challenges associated with its use in undergraduate education.

Keywords: Artificial Intelligence; Higher Education; Undergraduate Students; Lecturers; Teaching and Learning; Qualitative Research; Oman