

Impact of Over-Reliance on AI Tools on Cognitive Capabilities of State University Students in Sri Lanka

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Abstract

The widespread adoption of Artificial Intelligence (AI) tools has transformed learning environments in higher education. However, over-reliance on these tools has raised concerns regarding their potential impact on students' core cognitive capabilities. This study aimed to examine the impact of over-reliance on AI tools on cognitive capabilities among state university students in Sri Lanka. A quantitative research design was adopted, identifying over-reliance on AI tools as the independent variable and cognitive capabilities measured through critical thinking, decision-making, and analytical thinking as the dependent variable. Data were collected from 384 undergraduates representing 17 state universities using a structured questionnaire and analysed with SPSS. The regression analysis revealed that over-reliance on AI tools had a strong and significant impact on cognitive capabilities ($R^2 = 0.819$, $\beta = 0.905$, $p < 0.001$). Among the ethical dimensions contributing to over-reliance, AI hallucination ($\beta = 0.393$) and plagiarism ($\beta = 0.210$) were identified as the strongest predictors. These findings indicate that excessive use of AI tools impacts students' independent thinking, analytical reasoning, and decision-making abilities. The study recommends that higher education institutions in Sri Lanka establish clear guidelines and awareness programmes to ensure responsible AI use, preserving essential cognitive skills in the digital learning era.

Keywords: AI hallucination, algorithmic bias, cognitive capabilities, over-reliance on AI, plagiarism