

Impact of AI Tools on Programming Skills among ICT Undergraduates in the State Universities in Sri Lanka

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Abstract

Artificial Intelligence (AI) is advancing rapidly, and its application in education, particularly in programming, has attracted considerable attention. However, limited research has explored the direct impact of AI tools on programming skills among Sri Lankan undergraduates, particularly in relation to access, teacher preparedness, and educational equity. Therefore, this study investigates the impact of AI tools on the development of programming skills among IT and IS undergraduates in state universities in Sri Lanka. It addresses psychological and practical elements such as knowledge, motivation, attitude, and access to AI tools. The research adopted a quantitative research design, and data were collected through a structured questionnaire. Although the Morgan Table recommended a sample size of 364 undergraduates, practical challenges in achieving proportional representation across universities necessitated an adjustment. To ensure balanced representation, a sample of 450 undergraduates was targeted, comprising 30 students from each of the 15 universities. Ultimately, responses from 457 undergraduates were collected and analyzed using SPSS software. Descriptive statistics, correlation analysis, and multiple regression analysis were used in data analysis. It was concluded that the four factors positively affected the programming skills. These findings confirm that well-integrated AI tools can positively enhance students' programming skills. Depending on these findings, AI tools can be integrated into the curriculum of relevant subjects to support students in effectively using them for programming and problem-solving tasks. AI-based coding workshops, competitions, and literacy programs can be introduced, and leveraging campus resources can be done to improve accessibility and increase students' engagement. Therefore, the bottom line is that AI tools are not only a technological trend but a revolutionary process that turns undergraduates into competent and future-driven programmers.

Keywords: Artificial Intelligence (AI) tools, programming skills, Sri Lanka, undergraduate education