

## ***Assessment of Carbon Footprint of Using Electronic Devices vs Books as Learning Modes among a Cohort of Undergraduates of the University of Peradeniya***

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Global warming and climate change are major environmental challenges today. We must reduce energy consumption to lower greenhouse gas emissions. This study investigates the carbon footprint of primary leaning modes among undergraduates of the University of Peradeniya. With the increase usage of electronic devices among students, the research explores whether there are significant differences in carbon emissions among students who solely use electronic devices, those who exclusively use books, and those who employ both mediums. A Google Form questionnaire was distributed online to a diverse group of 30 students, representing various faculties and academic years across the university. The questionnaire contained questions related to demographics such as age, sex, study stream, and year of study, about the daily routine of students, their primary educational method, hours spent on those devices studying on average day, pages written on a book for an average day. Responses were tabulated on excel and mean carbon foot print value and total carbon footprints were calculated utilizing appropriate emission factors categorized under the ISO 14064 standards, particularly emphasizing Scope 2 emissions pertaining to purchased electricity consumption. Pairwise Wilcoxon tests with Benjamini-Hochberg correction were conducted to discern significant differences in carbon footprints among the three educational mode groups. Students exclusively using electronic devices exhibited the highest mean carbon footprint (0.0838488), followed by those utilizing an integrated education method (0.0573996), while students solely relying on books demonstrated the lowest carbon footprint (0.006944). There was a significant difference between students using electronic devices and those solely relying on books, emphasizing the latter's notably lower carbon emissions. (p-value < 0.001) However, no significant difference was found between students solely using electronic devices and those who employ an integrated approach utilizing both mediums. (p-value 0.88). Usage of Electronic devices for leaning leads to significantly higher carbon foot print, this finding could contribute to informed decision-making for sustainability initiatives within educational institutions.

**Keywords:** Primary Learning Modes, Electronic Devices, Carbon Foot Print, Integrated Education Method