

Development and Evaluation of an Interactive Road Safety Education Module for Secondary School Students in Sri Lanka

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Abstract

Vehicular accidents remain a major cause of fatalities and serious injuries worldwide, affecting both developed and developing nations. According to the World Health Organization (2024), annual road traffic fatalities have slightly declined to 1.19 million. Despite this reduction, road crashes remain the leading cause of death for children and young adults, with over 3,200 fatalities occurring daily. A significant proportion of child fatalities are linked to high-risk road use behaviors, exhibited either as pedestrians or vehicle occupants. This global issue is also evident in Sri Lanka, where, according to the Sri Lanka Police (2024), 24,589 road accidents were recorded, resulting in an average of six fatalities per day. Notably, 80% of these fatalities involved vulnerable road users. Among these, approximately 838 pedestrian fatalities were reported, averaging two deaths per day. In total, 2,368 accidents resulted in fatalities, with many more causing severe and often lifelong injuries. These statistics highlight the urgent need for targeted interventions to mitigate high-risk behaviors and improve road safety. “Age” has been identified as a significant factor influencing road accident involvement, underscoring the importance of early education in promoting road safety in Sri Lanka. One of the most effective strategies to address this issue is the implementation of a school-based road safety education program, which fosters safer behaviors among young drivers and vulnerable road users. This study focuses on secondary school students (ages 14–16), a key demographic for early intervention. Data samples will be collected from selected schools within the Colombo District to assess the impact of the educational initiative. The study aims to evaluate students' existing knowledge and attitudes toward road safety, introduce an interactive road safety education module, and assess its effectiveness using pre- and post-assessments. A preliminary literature review was conducted, followed by structured interviews with three road safety professionals and three educational experts/psychologists. The interviews, conducted in a semi-structured format using questionnaires, allowed for in-depth discussions on key road safety challenges, educational gaps, and potential interventions. Responses were analyzed using thematic analysis and the Relative Importance Index (RII) method to identify key themes and priorities. Based on these findings, a web-based road safety education (RSE) module was developed, focusing on the following key areas: Introduction to Road Safety, Knowledge of Traffic Rules & Symbols, Safe Driving & Passenger Habits, and Emergency Response Skills. As part of the pilot study, the module was distributed to 50 students, and feedback was collected to refine and optimize the content before commencing the full-scale study. Six schools in the Colombo District were selected based on willingness to participate and student population size, ensuring a diverse representation of students with varying exposure to road safety risks. Students from three schools were designated as the “Control Group,” and students from the remaining schools as the “Treatment Group.” Both groups were initially granted access to the module, and responses were recorded through a pre-assessment survey. After this phase, only the Treatment

Group retained full access, allowing them to engage with interactive content and activities over the designated period. The Control Group had no further access beyond the initial assessment, ensuring a comparative analysis of knowledge retention and behavioral changes. After one month, a final questionnaire was administered via the web module, allowing participation from both groups to assess the impact of the intervention. Participants' responses were analyzed using statistical methods such as mean, median, and standard deviation, enabling a comprehensive interpretation of the findings. The outcomes of this research are expected to provide valuable insights for educational and road safety authorities in Sri Lanka, contributing to potential enhancements in the secondary school curriculum to improve road safety education.

Keywords: *road safety, secondary school students, interactive road safety education module, web-based education*

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