Factors Affecting the Science Achievement Level of Junior Secondary Students in Sri Lanka

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Science education is crucial for national development, yet the persistent low science achievement among junior secondary students (Grades 6–9) remains a national concern in Sri Lanka. This study addressed the research question of identifying the multi-faceted factors influencing this achievement level. The primary objectives were to investigate student attitudes toward science and teachers, peer group dynamics, and family socioeconomic factors. Based on the Krejcie and Morgan sampling table, a sample of 360 students was selected using a stratified random sampling method to ensure representation across various school types. The primary quantitative analysis relied on student data, which was subsequently triangulated with data from teacher and parent questionnaires to cross-validate findings and ensure reliability. Exploratory Factor Analysis (EFA) on 34 items identified 11 distinct factors, including family support for science education, teacher enthusiasm and methodology, students' positive attitudes, and difficulty of science comprehension. An Independent Samples T-test confirmed a significantly lower mean science achievement score for rural students ($M = 68.5$) compared to urban counterparts ($M = 75.2$) ($t = 4.87, p < 0.001$). Multiple Regression Analysis revealed that the studied factors explained 48% ($R^2 = 0.48$) of the variance in science achievement. Specifically, Student Self-Confidence ($\beta = 0.38, p < 0.001$), Learning Interest ($\beta = 0.25, p < 0.01$), and Family Background ($\beta = 0.15, p < 0.05$) exercised significant positive impacts. Consequently, policy recommendations are proposed to enhance science education quality by fostering student self-confidence and motivation, alongside refining teacher instructional methodologies and collaborative learning environments.

Keywords: science achievement, student factors, junior secondary, stratified random sampling, multiple regression analysis