Parental Influence in Shaping Student Performance: A Data-Driven Study in Bangladesh

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Abstract

In Bangladesh, student performance is shaped by a range of factors, including parental education, occupational status, and access to supplementary tutoring. Understanding these influences is crucial for crafting effective educational policies. This study examines how parental education, professional engagement, and tutoring access impact students' academic achievement. The research aims to provide evidence-based insights to enhance equitable educational opportunities and targeted support systems. A comprehensive dataset was analyzed, incorporating responses from online surveys and physical data collection in schools across Bangladesh. Key variables like parental education, occupational roles, and tutoring involvement were analyzed alongside student performance in core subjects like English, math, and science. Descriptive statistical techniques and machine learning models were applied to identify trends, correlations, and the magnitude of these influences. Rigorous preprocessing, including categorical encoding and numerical standardization, ensured the reliability and validity of the data. Preliminary findings indicate that students with parents in professional occupations and with higher educational qualifications achieve better academic results. Access to tutoring notably improves outcomes, particularly for students from less-educated or non-professional family backgrounds, helping to close achievement gaps across socioeconomic levels. The findings suggest that integrated educational policies, focusing on parental involvement and equitable resource distribution, are essential for a more inclusive education system.

Keywords
Student performance, Parental involvement, Educational outcomes, Machine Learning, Bangladesh