

## **What Factors Most Affect a Students Educational Success?**

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The question of what causes a countries students to underperform academically is of great concern, not just to individual schools but the government as well. When students underperform, the rest of the country can take a hit through stagnation in economic growth along with plenty other negative consequences. The potential causes of this occurrence can range from personality differences in the students, to different teaching styles, to government funding. The goal of this project is to perform data analysis on intra and inter country data for Portugal. Ultimately determining what factors most influence a students success in education. Given the results of the data analysis, one can then act in such a way that will benefit the students education. This may include changes to school resource allocation, government spending, as well as teaching styles which accommodate student needs.

The intra data source consists of a questionnaire given to 649 students at a Portuguese secondary school along with their grades. The questions probe information about the students demographics, family history, and out of school activities. While the inter data source comes from the World Bank, with information about different educational outcomes between countries and potential reasons for them.

The approach to solve this problem will follow the following outline. First, the data will be obtained and cleaned such that it is usable for analysis. This will include looking through the World Bank for potentially relevant information, as well as simply obtaining the questionnaire data which is found in the Machine Learning Repository. Next, initial statistics will be run on the project to determine the relationship between educational outcomes and multiple variables. Using regression to determine the functional dependence of the variables. Lastly, we'll look into applying more machine learning techniques to the problem. Such as network analysis where we can look at the potential for poor educational outcomes given some initial information about a student.