Curriculum Optimization for Ontario Public Schools

Business Problem:
Elementary schools across Ontario face the challenge of meeting provincial reading standards; students who are unable to meet this standard at a young age struggle to catch up throughout the remainder of their studies. The goal is to analyze the data to determine the primary challenges that prevent students from succeeding and predict which attributes improve reading scores. By identifying these components, the provincial government can launch targeted programs to strategically support elementary schools across Ontario.

Data Understanding:
The dataset contains the following attributes:

- School demographics (school type, grade range, location, enrolment)
- Student demographics (special needs status, gifted status, achievement of provincial reading standard)
- Student Household data (non-English/French speaking background, newcomer to Canada, income level)

Proposed Solution Using Machine Learning:
The project would apply different classification models, specifically Logistic Regression and K-Nearest Neighbors Classifier, to achieve several key outcomes:

- Accurate Student Performance Prediction: Schools can identify students at risk of failing their grade 3 reading test based on key factors such as enrollment, parental education, and socioeconomic status.
- Targeted Interventions: Educational resources can be allocated more effectively to schools with students that have higher predicted rates of failure, allowing for more support to students.
- Data-Driven Decision Making: Insights from the model can inform policy adjustments and strategies aimed at improving reading performance across different regions and demographics

Implementing this machine learning solution will lead to improved educational outcomes by enabling targeted interventions and more informed decision-making at both school and district levels.