Improving Student Learning Experience within

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Introduction

Our team aims to analyze how different materials used in CourseKata affect students' performance in statistics courses through statistical analysis. We will assess variables such as engagement time, chapter progression, and End-of-Chapter (EOC) performance to understand the advantages and disadvantages of each material. Additionally, we will compare passing and failing rates among students with varying engagement times to determine the best approach to enhance student learning.

Methodology

1. Random Forest Classifier

We will employ a Random Forest Classifier to identify the most significant variables influencing students' EOC performance. Key variables include the number of attempts, total engagement time, chapter progression, and material type. Emphasis will be placed on engagement time, chapter progression, and material type due to their high correlation with EOC performance.

2. Modeling

Our analysis will compare the performance outcomes associated with three primary types of CourseKata materials: college-level statistics (ABC), college-level advanced statistics (ABCD), and high school level (ABC). We will group data based on EOC performance, distinguishing between passing (≥70%) and failing students. Furthermore, we will analyze passing rates for each material type and trends in average EOC scores for college-level ABC and ABCD textbooks. The relationship between engagement time and performance outcomes will also be explored.

Result

The data suggests a strong correlation between higher engagement time per chapter and academic performance in both college and advanced college versions of the textbook. However, this correlation is less significant in the high school version, where engagement decreases over subsequent chapters. Further analysis is needed to understand factors influencing this dynamic, including student motivation and instructional methods.

Conclusion

Our analysis aimed to understand the impact of different CourseKata materials on student performance in statistics courses. Through statistical methods and detailed modeling approaches, we found significant correlations between engagement time and academic performance, particularly in college-level textbooks. However, the relationship was less pronounced in high school-level materials. Understanding these nuances is crucial for enhancing student learning outcomes in statistics education.