

Exploring Student Study Habits and Academic Performance

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IESM 315: Design and Analysis of Experiments

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Justification of the Project:

Understanding how students study and its impact on their grades is crucial for educators and students. This investigation seeks to uncover the relationship between study habits and academic performance by examining factors like time management and study strategies. The goal is to provide practical insights beneficial for students, aiding them in improving their learning approaches and achieving better results. Furthermore, educators can utilize this information to offer tailored support, fostering a more effective learning environment. Ultimately, the project aims to equip students with the knowledge and tools for academic success, simultaneously assisting teachers in providing specific support to their students.

Methods for Collecting Data:

In our investigation into student study habits and academic performance, surveys will be the primary data collection method. To uphold participants' privacy and encourage honesty, the surveys will be anonymous. Distributed to students across various universities, these surveys will seek quantitative insights into study habits, time management practices, preferred learning environments, active participation, healthy lifestyle, note-taking skills, peer collaboration, and goal-setting. Using close-ended questions and rating scales to simplify responses, a standardized format will ensure consistent and comparable data from a diverse sample. The surveys will be administered electronically for widespread participation and efficient data collection. Quantitative data will undergo statistical analysis to unveil patterns, correlations, and trends. This focused survey approach will allow examination and quantification of key aspects of student

study behavior, aiding in understanding factors influencing academic performance. Additionally, academic grades from the previous semester or academic year, collected anonymously with participants' consent, will serve as objective indicators of academic performance correlated with study habits reported in the surveys.

Analysis Plan:

The analysis plan for our study on student study habits and academic performance will employ a combination of descriptive and inferential statistical methods to extract meaningful insights. Descriptive statistics, such as mean, median, and mode, will summarize survey responses, offering a clear overview of common study habits and time management practices. Correlation analysis will identify relationships between specific study habits and academic performance, revealing which habits are positively or negatively correlated with better grades. Through a comparative analysis, study habits reported by high-performing students will be compared with those of lower-performing students, highlighting key differences and providing practical insights.

Several statistical tests will be employed to reveal patterns and relationships within the data, illustrating the connections between study behaviors and academic success. Regression analysis will help to identify and quantify the impact of independent variables, such as study habits, on the dependent variable—academic performance. Applying Analysis of Variance (ANOVA) is practical when comparing means across multiple groups, especially in exploring the potential influence of diverse study habits or learning styles on academic outcomes. T-tests will help us compare means between the two groups, aiding in assessing whether variations in academic performance based on different study habits are statistically significant. Additionally,

for categorical variables in the dataset, the Chi-Square test will be utilized to examine whether a significant association exists between them. Throughout this analysis, the statistical software R will be employed, providing a robust platform for data processing and analysis.

By investigating how different study behaviors relate to grades, we aim to offer practical tips for students and support for educators. Understanding these connections—whether it's how often you study, participate in study groups, or manage your time—can make a real difference. This project is about giving students the tools they need to succeed and helping teachers provide the right kind of support. Education is an ongoing process, and understanding study habits is crucial for fostering a culture of success in learning.