

Walsoft Student Success Optimization

Introduction

This report presents a comprehensive, data-driven analysis of the Walsoft training program dataset to strategically enhance **student success**, optimize **resource allocation**, and increase the overall **effectiveness** of the training program. In an increasingly competitive educational landscape, utilizing performance data is critical to ensuring a strong return on investment for both Walsoft and its students.

Purpose and Scope

The primary objective of this analysis is to identify the critical factors that drive student performance, segment the student population to locate at-risk groups, and evaluate the efficiency of current resource deployment. The analysis specifically addresses three core management questions:

1. **Admissions:** Should the entry exam remain the primary filter for admissions?
2. **At-Risk Students:** Which student groups require dedicated, extra support?
3. **Resource Allocation:** How can resources be reallocated for maximum positive impact on success metrics?

Methodology

The study employed data cleaning and standardization techniques followed by an **Exploratory Data Analysis (EDA)** using methods equivalent to advanced SQL querying:

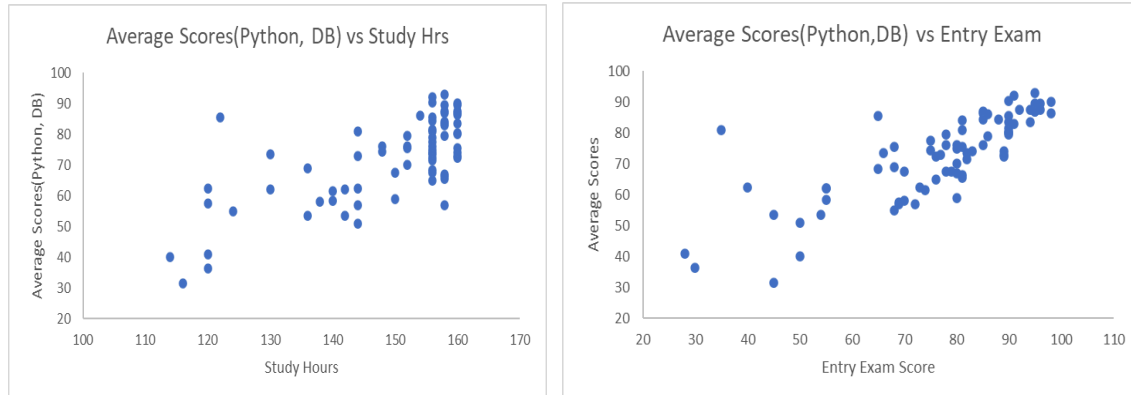
- **Correlation Analysis** was used to quantify the relationship between pre-program variables (Entry Exam, Study Hours) and the final Average Score.
- **Performance Segmentation** was applied across categorical groups (Previous Education, Residence) to identify specific knowledge gaps and performance trends.

The findings contained within this document provide an evidence-based framework for Walsoft to implement strategic interventions, ensuring the program is both successful for its students and efficient in its operations.

Student Success Drivers (Correlation Analysis)

The high correlation of entry exam scores and study hours with the final average score is critical for defining admission criteria and program engagement metrics.

Entry_Exam_Correlation	0.794277111
Study_Hours_Correlation	0.720640324



Program Effectiveness (Performance by Previous Education)

Students with a High School background show the lowest overall average score, driven down by a particularly low average DB score (61.4), indicating a specific knowledge gap in this domain compared to other groups.

Previous Education	Average Python Score	AverageDatabase Score	Student Count
Masters	81.18	77.06	16
High School	70.15	61.42	19
Doctorate	75.6	69.8	5
Diploma	70.08	69	12
Bachelors	80	70.88	25

Residence Impact (Resource Optimization)

The performance differences between residence types are relatively minor, suggesting that high-cost residence (like BI Residence) is not necessarily a guarantee of superior performance compared to others.

residence	Avg Python Score	Avg DB Score	Student count
Sognsvann	81.8333	69.8333	12

Private	75.3333	70.2121	33
BI Residence	74.4688	68.5625	32

Strategic Recommendations for Walsoft

Based on the data analysis, Walsoft should adopt a three-pronged strategy focusing on student selection, targeted curriculum, and engagement.

Improve Student Success

- Refine Admission Criteria: Heavily weight the entry exam score (correlation of 0.79) during the selection process. This is the single strongest predictor of success. A higher entry threshold will immediately lift average student performance.
- Mandate/Encourage Study Time: Leverage the strong correlation with study hours (0.72) by:
 - Mandating a minimum number of required study hours per week.
 - Introducing structured study groups or mentorship programs to help students consistently reach the optimal study hour range.

Optimize Resources

- Focus on Gaps, Not Premium Resources: Since students in BI Residence have the lowest average score (71.5), and residence type is not a strong success factor, Walsoft should avoid over-allocating premium resources based on residence type alone.
- Reallocate DB Training Resources: The data shows Python and DB scores are only moderately correlated (0.44), suggesting they are separate challenges. Walsoft should reallocate resources from general study assistance to targeted DB training, especially for the identified high-risk group (High School background).

Increase Program Effectiveness

- Develop a Bridging Program: Create a mandatory or highly recommended DB Fundamentals Bridging Course for students admitted with a High School background, or any student whose initial DB assessment is low. This addresses the specific, identifiable weakness (average DB score of 61.4) that is driving down their overall performance.
- Segmented Curriculum: Review the curriculum structure to see why Bachelor's and Master's graduates perform better. Ensure the program structure effectively fills in knowledge gaps for lower-performing education levels, making the training equally effective for all accepted backgrounds.