Optimizing Employee Performance: Evaluating Advanced Warehouse Management Training Programs

Team 1K

Introduction

Overview & Objective

Nexus Logistics Solutions conducted a two-month experiment to improve Course 103: Advanced Warehouse Management Systems. The study tested Curriculum A and Curriculum B across four locations, compared to the current curriculum in two locations, involving 593 employees.

Performance metrics:
- Proficiency Scores: Measure employees' understanding of advanced warehouse management systems at both the start and end of the course.
- Application Scores: Evaluate employees' ability to apply advanced warehouse management concepts in practice at both the start and end of the course.
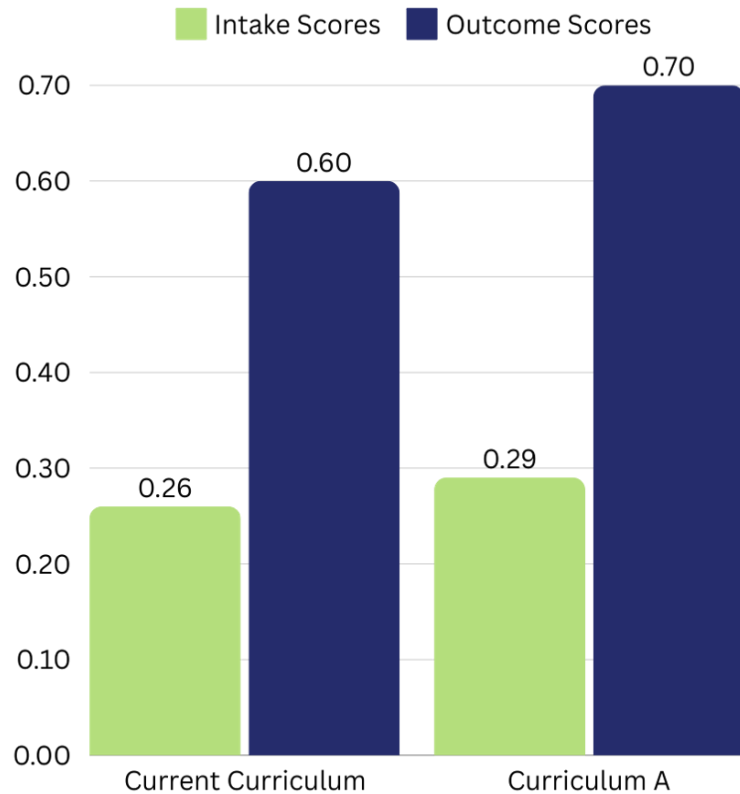
The goal is to provide actionable insights by:
- Identifying which curriculum drives the highest improvement in both proficiency and application scores.

- Supporting decision-making on whether to adopt Curriculum A, Curriculum B, or retain the current curriculum based on data-driven evidence.

- Highlighting the experimental design: factors influencing the results, and strengths of the analysis.
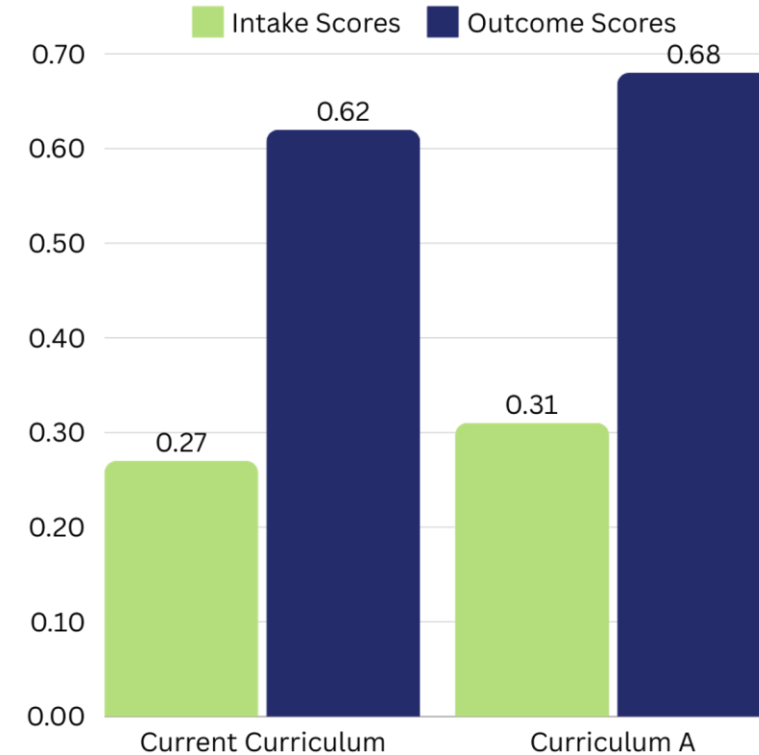
Curriculum A: Consistent Gains in Proficiency and Application Scores Over the Current Curriculum
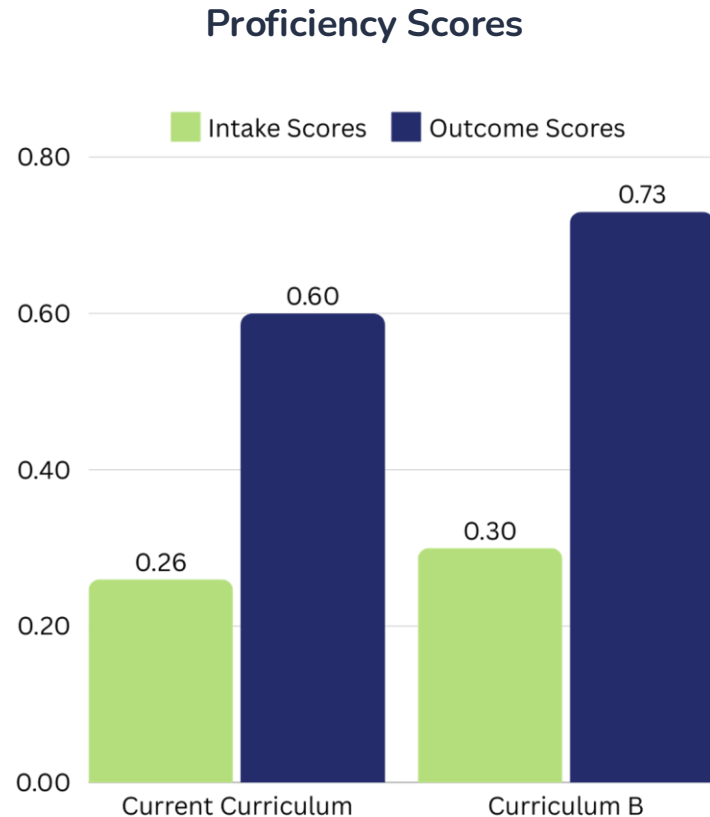

Proficiency Scores

Offices with Curriculum A improved by **0.41 points,** which is **0.7 points more** than offices using the current curriculum.
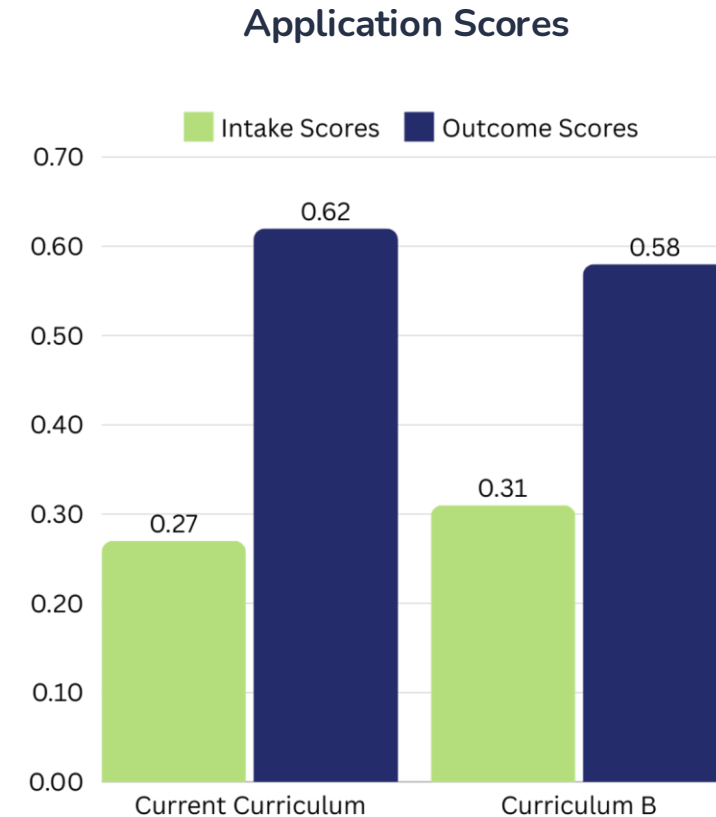

Application Scores

Offices with Curriculum A improved by **0.37 points**, which is **0.6 points more** than offices using the current curriculum.

Curriculum B: Improving Proficiency but Falling Behind in Applications Over Current Curriculum

Proficiency Scores

Legend: Intake Scores (green), Outcome Scores (dark blue)

	Current Curriculum	Curriculum B
Intake Scores	0.26	0.30
Outcome Scores	0.60	0.73

Offices with Curriculum B improved by **0.43 points**, which is **0.13 points more** than offices using the current curriculum.

Application Scores

Legend: Intake Scores (green), Outcome Scores (dark blue)

	Current Curriculum	Curriculum B
Intake Scores	0.27	0.31
Outcome Scores	0.62	0.58

Offices with Curriculum B saw a **0.04-point less improvement** in application scores than the current one, compared to a **0.35-point improvement** in offices using the current curriculum.

Program A significantly improves proficiency and application scores compared to the current program

Proficiency	Intake Score	Outcome Score
Current	0.2613	0.6006
Program A	0.2939	0.6986

+ 0.0326   + 0.098

+0.636

Proficiency	Intake Score	Outcome Score
Current	0.2661	0.6231
Program A	0.3053	0.6816

+ 0.0392   +0.0585

+0.194

- **Intake Score:** Participants in Program A start with a 0.0326 higher proficiency score compared to those in the Current Program before the training.

- **Training Effect:** After training, Program A participants see an additional improvement of **0.0636** points compared to participants in the Current Program.

- **Training Program A has a measurable and significant impact on improving proficiency.**

- **Intake Score:** Participants in Program A start with a 0.0392 higher application score compared to those in the Current Program before the training.

- **Training Effect:** After training, Program A participants experience an additional improvement of **0.0194** points compared to participants in the Current Program.

- **Training Program A contributes positively to practical application skills though the improvement Is smaller than in proficiency.**

Program B performs better in improving proficiency scores but underperforms in improving application scores
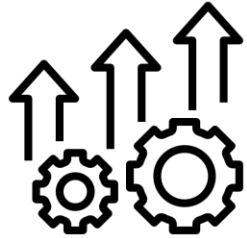
Proficiency	Intake Score	Outcome Score
Current	0.2613	0.6005
Program A	0.3039	0.7314

+ 0.0426 **+0.1309**

+0.0883

Proficiency	Intake Score	Outcome Score
Current	0.2661	0.6231
Program A	0.3142	0.5831

+0481 **-0.04**

- 0.0881

- **Intake Score:** Participants in Program B start with a 0.0426 higher proficiency score compared to those in the Current Program before the training.

- **Training Effect:** After training, Program B participants see an additional improvement of **0.0883** points compared to participants in the Current Program.

- **Training Program B significantly improves proficiency scores, also achieving a higher score improvement than program A.**
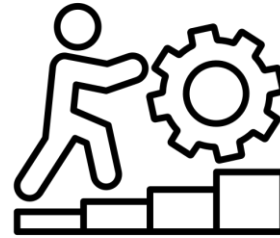
- **Intake Score:** Participants in Program B start with a 0.0481 higher application score compared to those in the Current Program before the training.

- **Training Effect:** After training, Program B participants see a **0.0881** points lower application scores improvement compared to participants in the Current Program.

- **Training Program B underperforms in improving application scores than the current program, suggesting a potential disconnect between training content and practical application.**
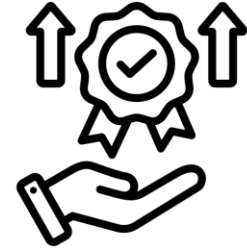
Training Program A should be adopted

Program A Shows Significant Improvement in Proficiency Scores

Program A significantly improves proficiency scores, confirming its effectiveness in enhancing proficiency.

Program A Improves Application Scores

Program A positively impacts application scores, demonstrating measurable improvement in application skills.

Consistent Performance Across Metrics for A

Program A delivers consistent, statistically significant improvements in both proficiency and application scores, making it a reliable choice, unlike Program B.

Experimental Design Evaluation: Strengths

1. **Clear Grouping:**
   o Employees were assigned to specific training programs (A, B, or Current), creating distinct groups for comparison.
   o This allowed for a structured evaluation of the training programs' effectiveness.

2. **Pre- and Post-Training Assessments:**
   o Using intake (pre-training) and outcome (post-training) scores helps isolate the effect of the training program on employee performance.

3. **Diverse Geographic Locations:**
   o Testing across multiple locations ensures that the results are not limited to a single demographic or office culture.

4. **Controlled Comparison:**
   o The use of the Current Program as a baseline allowed for the measurement of improvements or declines relative to existing practices.

Experimental Design Evaluation: Factors That May Have Influenced the Results
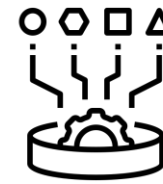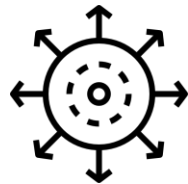
1. **Selection Bias:**
   o Employees were not randomly assigned to training programs; they were grouped by location.
   o Differences in employee characteristics (e.g., baseline skills, motivation) across locations could skew results.
2. **External Influences:**
   o Factors such as workload, local management practices, or morale at each office could affect training outcomes independently of the program itself.
   o For example, one office might have higher baseline proficiency due to prior training or a more experienced workforce.
3. **Variability in Implementation:**
   o The quality of training delivery might have varied across locations, affecting how well the programs were implemented and perceived by employees.

THANK YOU!!