



THE UNIVERSITY OF TEXAS AT EL PASO

IE 4266 – Senior Design

Training System For Mid-West Textile LLC

Reducing the learning curve while improving new hire retention through optimized onboarding and process standardization.

Josue Hernandez – Anjelica Rodriguez – Myrna Rebecca Ochoa

Instructor: Dr. Arunkumar Pennathur

Spring 2026 • May 5th, 2026

PRESENTATION OUTLINE



01  Introduction & Background

02  Kahoot Activity

03  Current Learning Curve

04  Variability Of Decision-Making

05  Problem Statement

06  Our Approach

07  Conclusion

08  Appendix

INTRODUCTION & BACKGROUND



Context

Mid-West Textile LLC (est. 1982) is a large-scale North American textile recycler operating four facilities and processing around 45M lbs annually into 250 SKUs for domestic and international markets, supporting sustainability by diverting waste from landfills.



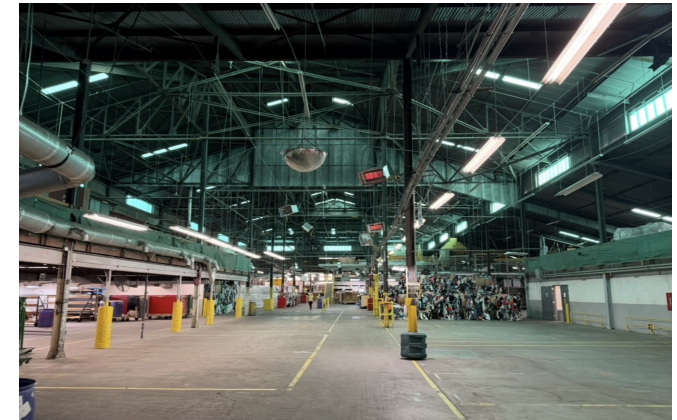
Motivation

New hires experienced extended learning curves, accompanied by a declining retention rate.



Purpose

Develop standardized instructional content along with visual, interactive training resources, and implement continuous process improvements to enhance operational efficiency.





GRADE NAME
(SV) BOOT DR. MARTENS
(SV) SHOE ADU ATH OLD SCHOOL
(SV) SHOE DR. MARTENS
(V) BOOT COWBOY
(V) BOOT MEN WORK #2&3
(V) BOOT MEN WORK GD
(V) BOOT MEN WORK GD
(V) BOOT MILITARY
(V) BOOT MILITARY TAN
(V) SANDAL BIRKENSTOCK
(V) SHOE CANVAS CONVERSE
A - BOOTS WIN UGG
A - SHOE VINT VANS P-S
A - SHOES ATHLETIC GUA
A - SHOES ATHLETIC P-G
A - SHOES ATHLETIC SD
A - SHOES ATHLETIC WB
A - SHOES BARATA
A - SHOES CANVAS P-G
A - SHOES SANDALS SD
A - SHOES VANS / CONVERSE S-W
C - SHOES GUA
C - SHOES P-S
F - ACCESSORIES VIN MIX P-W
F - SHOES VINT P-W
F - SHOES VINT P-W
M - SHOES GUA
M - SHOES P-SD
M - SHOES SANDALS P-G
RESORT CRED ELP
SF - BOOTS WIN P-G
SF - BOOTS WIN P-G
SF - SLIPPERS P-T

Kahoot Time!

<https://create.kahoot.it/share/household-evaluation/e0239a5e-24b8-4043-acb0-68378fe39bb3>

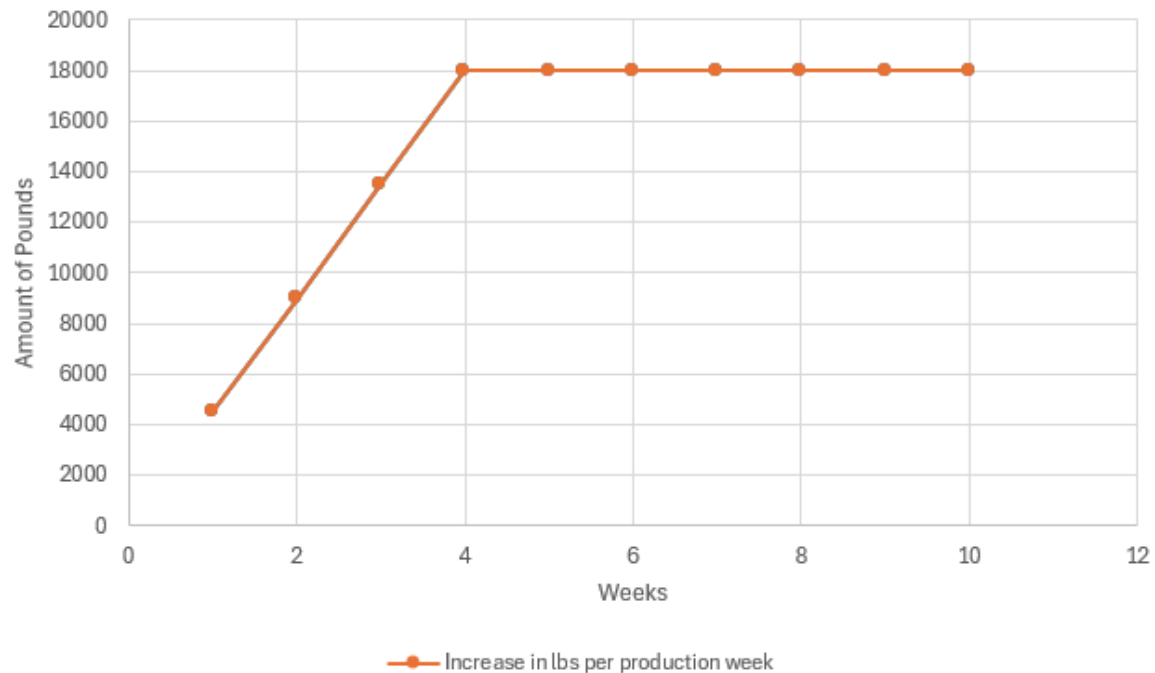


CURRENT TRAINING LEARNING CURVE



Daily Standard in lbs	18000									
Week	1	2	3	4	5	6	7	8	9	10
% of increase in weekly production	25%	50%	75%	100%	100%	100%	100%	100%	100%	100%
Increase in lbs per production week	4500	9000	13500	18000	18000	18000	18000	18000	18000	18000

Learning Curve: First Break (Big Bales)



VARIABILITY OF NEW-HIRE SORTER DECISION-MAKING CRITERIA

KAHOOT SIMULATES NEW-HIRE SORTER HESITATION WHEN SORTING



New-hire sorters depend on their personal decision-making criteria to sort items, leading to uncertainty of performance.

This highlights the importance of standardized training, since minimizing early-stage error and process variation directly decreases the time you spend in quality stations.

Standardized training not only increases efficiency in process, but also decreases worker quota pressure, potentially leading to an increase in new-hire retention.



PROBLEM DEFINITION

PROBLEM STATEMENT

The current onboarding process provides only a general overview of plant operations and lacks standardized, role-specific training for sorter positions, which are critical revenue-generating functions. This deficiency results in prolonged learning curves, variability in sorting quality, and delays in achieving required productivity quotas (measured in pounds sorter per day), ultimately contributing to inconsistent process performance and reduced new-hire retention.

PROJECT OBJECTIVES

1

Develop and standardize role-specific training for sorters

2

Reduce new-hire learning curve and time to productivity

3

Improve sorting consistency and new-hire retention

SCOPE & ASSUMPTIONS

In scope: Standardized training materials (scripts, videos, interactive content) for new-hire sorters within the existing process and workforce.

Out of scope: Automation, capital investments, process redesign, and non-training retention factors.

Assumes: Fixed operational environment; defined time, budget, and resource constraints.

OUR APPROACH



PHASE 1

Gemba & Candid Comments

- Observe the full process to understand actual workplace conditions and rationale behind procedures.
- Interview workers with different seniority levels.

PHASE 2

Identify Elements Of Training System

- Identify sorter challenges.
- Identify bottlenecks and opportunities for efficiency improvement.
- Develop scripts for training videos clarifying how each department functions, relevant for new-hire sorters.

PHASE 3

Develop Training Materials

- Record all necessary material, develop training videos and get approval from corresponding authorities.
- Develop Kahoots as interactive content complementary to training videos.
- Confirm feasibility with authorities.

PHASE 4

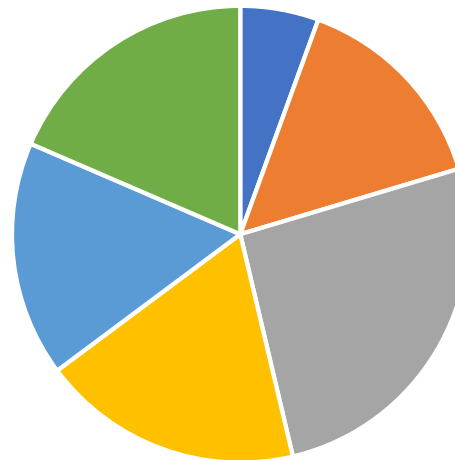
Submit Deliverables

- Submit prototype training videos, Kahoot's, complementary recommendations and relevant material to corresponding Mid-West personnel.

Phase 1: Gemba & Candid Comments



Challenges As A Sorting New-Hire



- Weight of Items
- Lost time in details
- Brand- Dupe Confusion (Shoes)
- Language Barrier (Grades)
- Inconsistent Quality Judgement
- Dependance On Department Lead

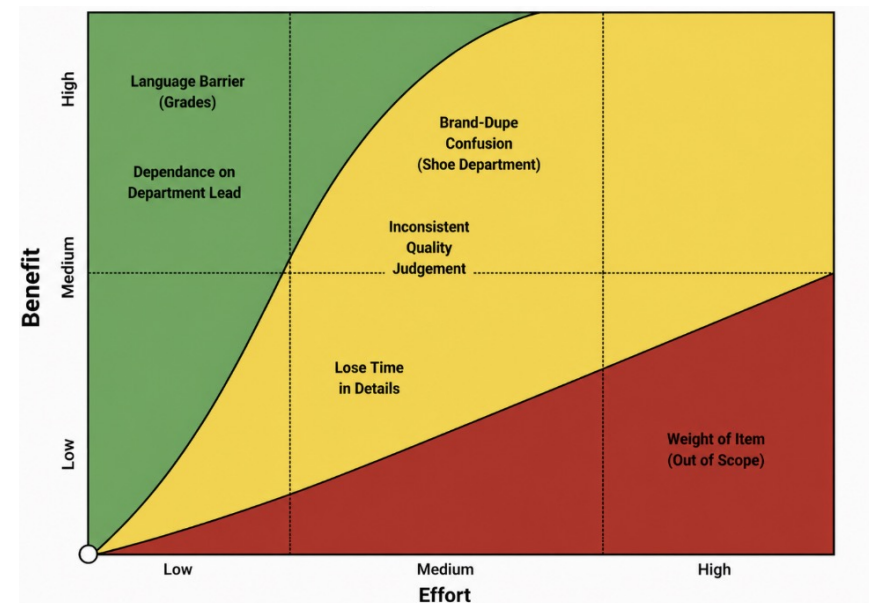
PHASE 2



Challenges Within Scope

Challenge	Scope/Feasibility	Impact on Training
Weight of Item		Out of Scope
Brand-Dupe Confusion (Shoe Department)		Emphasize where to locate the brand of a shoe for vintage grades
Inconsistent Quality Judgement		Emphasize what specific details of an item make them belong to a quality. Implement a visual training scale.
Lose Time in Details		Analyze short cuts for mandatory activities.
Language Barrier (Grades)		Implement translation of the grades in training videos.
Dependance on Department Lead		Incorporate necessary details into the training videos to minimize inquiries from sorters to the department lead.

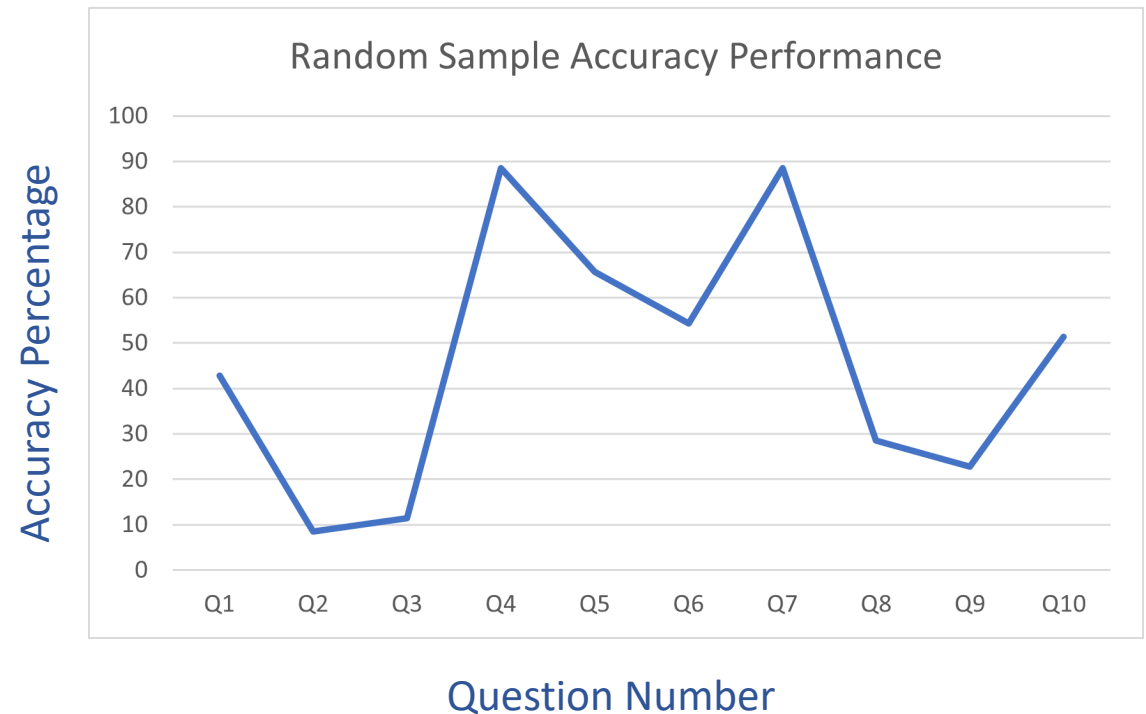
Benefit-Effort Matrix



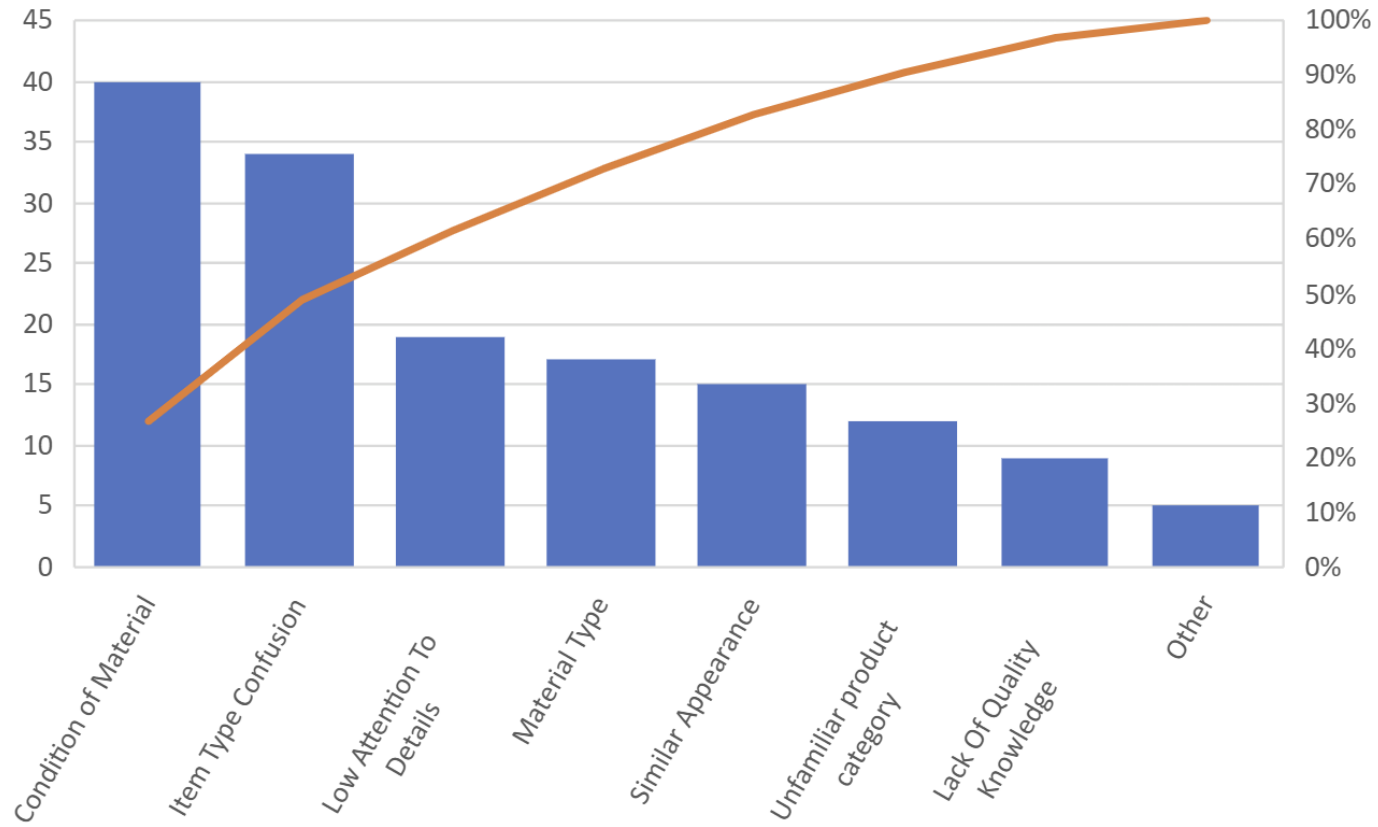


RANDOM SAMPLE DATA

- Using the same activity, we gathered a random sample of 35 people with a variety of background and age to test the accuracy of their sorting criteria given only the names of the grades and the quality scale to mimic the first day of a sorter.



PRINCIPAL POINT OF CONFUSION



Identify Opportunities For Improvement



Visual sizing reference reduces tag-checking time

Implemented a standardized visual sizing reference in the First Break area by installing a fixed tape marker representing the approximate width of size 14 youth jeans. This allows operators to quickly compare garments without checking tags, ensuring that items exceeding the threshold are consistently routed to the designated bin, reducing inspection time and improving sorting efficiency and consistency.

Develop Training Elements



Establish a baseline for each sorting department

Standardized scripts were implemented to define a clear operational baseline for sorters, while also formalizing grade structure (W/M/A), standardization grade sheet translations.

Reasoning

This ensures consistent interpretation of grading criteria, label placement, and quality standards

Develop interactive material for sorters

User-friendly Kahoot modules were developed using cross-functional examples from four departments to illustrate quality classification criteria and grade assignment rationale, aiming to reduce ambiguity and minimize decision-making hesitation during sorting operations.

Reasoning

Kahoot was chosen because the workforce has limited technological skills, so a simple and widely recognized platform was needed to ensure usability

PHASE 4





vintage bags

Contributions



Developed 12 standardized training scripts for multiple departments (First Break, Household, Miscellaneous, Miscellaneous Vintage, Shoes, Shoes Vintage, Test and Resort) in both English and Spanish.

Created and edited 12 training videos to train new-hire sorters in both English and Spanish.

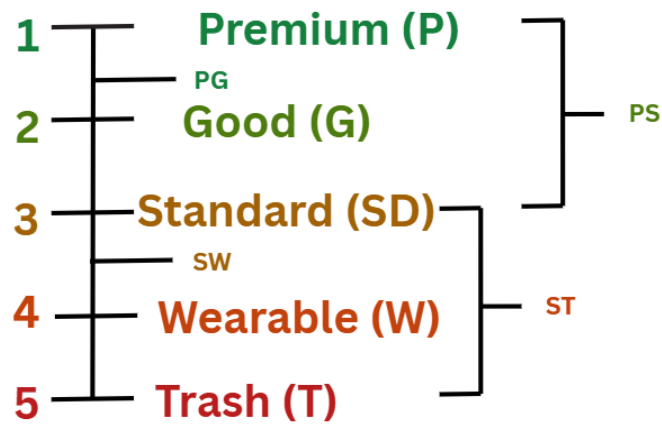
Development of complementary interactive materials to improve learning consistency.

RECOMMENDATIONS FOR MIDWEST TEXTILE LLC



Implement standardized visual aids for quality grades across all remaining sorting areas to support operator accuracy, reduce classification variability, and improve workflow consistency.

Quality Scale

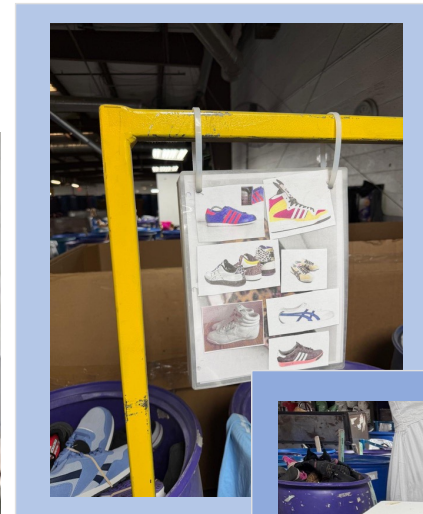


Escala de Calidad



RECOMMENDATIONS FOR MIDWEST TEXTILE LLC

Reposition shoe vintage reference photo package to the sorter's workstation to minimize motion and improve accessibility.



CONCLUSIONS



- **Variability is a training problem, not a worker problem.** Inconsistency in sorting decisions stems from unclear references and ambiguous criteria, not worker ability.
 - **Standardization improves productivity without capital investment.** Clear standards and accessible references reduce confusion and quota pressure during early stages, supporting new-hire retention.
 - **This validates a core IE principle.** Standardization reduces variability, and reduced variability drives consistency and process optimization.
-



THANK YOU

QUESTIONS?

THE UNIVERSITY OF TEXAS AT EL PASO

Josue Hernandez – Anjelica Rodriguez – Myrna Rebecca Ochoa • IE 4266 • Dr. Arunkuman Pennathur

Spring 2026

REFERENCES

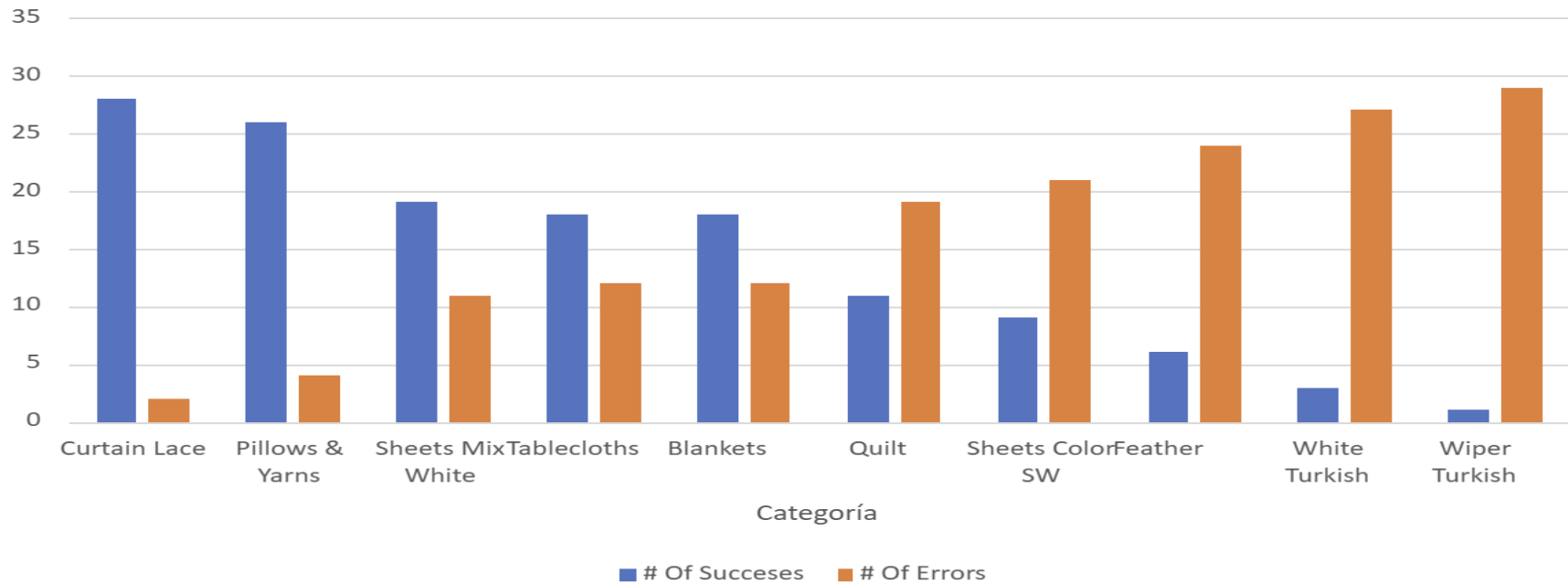


- Dyer, L. (2023, May 24). *The benefit effort matrix – a tool to determine where to apply your resources*. Pyzdek Institute. <https://www.pyzdekinstitute.com/blog/six-sigma-tools/the-benefit-effort-matrix-a-tool-to-determine-where-to-apply-your-resources.html>
 - . (2026). *Mid-West Textile LLC – Official Website*. <https://mid-westtextile.com>
 - (2010). *A Skilled Workforce for Strong, Sustainable and Balanced Growth*. https://www.ilo.org/global/publications/books/WCMS_158736/lang--en/index.htm
-

APPENDIX A



Number of successes and errors per category (Before Training)

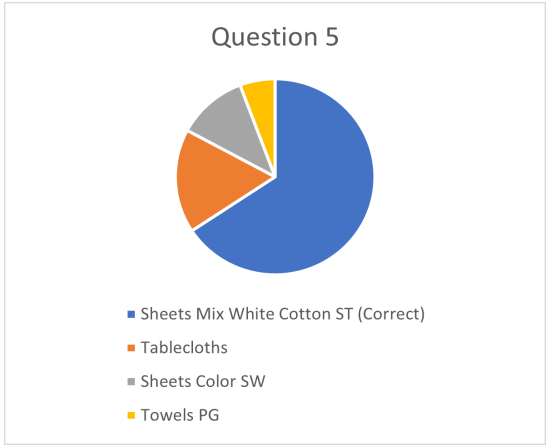
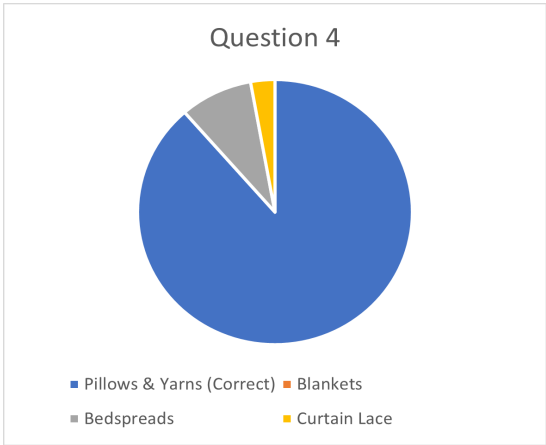
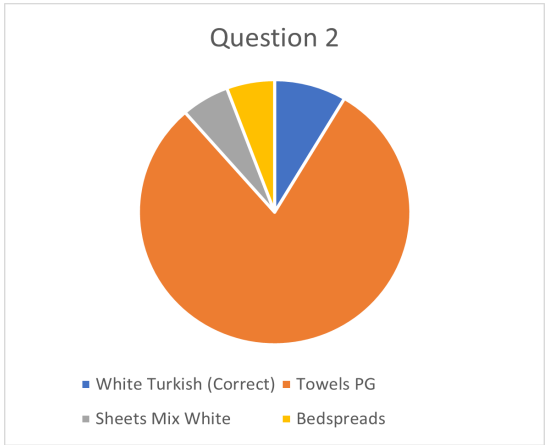
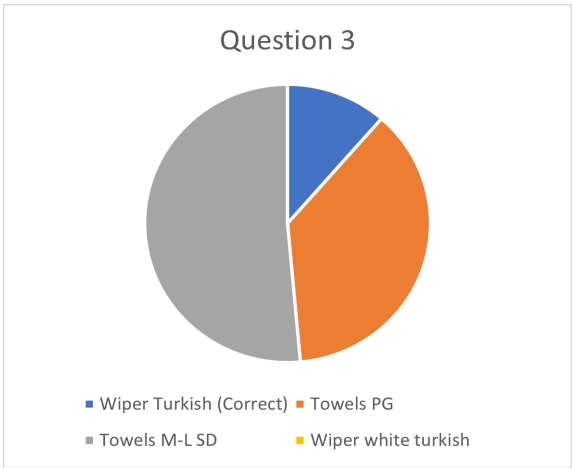
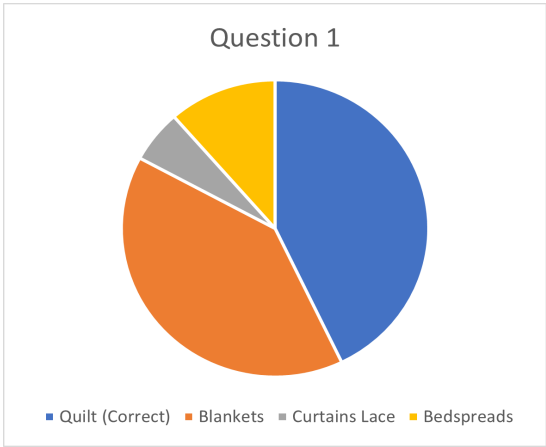


APPENDIX B



Question						Accuracy %
1	Quilt (Correct)	Blankets	Curtains Lace	Bedspreads		
	15	14	2	4	35	42.86
2	White Turkish (Correct)	Towels PG	Sheets Mix White	Bedspreads		
	3	28	2	2	35	8.57
3	Wiper Turkish (Correct)	Towels PG	Towels M-L SD	Wiper white turkish		
	4	13	18	0	35	11.43
4	Pillows & Yarns (Correct)	Blankets	Bedspreads	Curtain Lace		
	31	0	3	1	35	88.57
5	Sheets Mix White Cotton ST (Correct)	Tablecloths	Sheets Color SW	Towels PG		
	23	6	4	2	35	65.71
6	Tablecloths (Correct)	Sheets Color PG	Curtains Lace	Sheets Color SW		
	19	6	6	4	35	54.29
7	Curtain Lace (Correct)	Bedspreads	Feather	Quilt		
	31	0	2	2	35	88.57
8	Sheets Color SW (Correct)	Bedspreads	Sheets Color PG	Blankets		
	10	10	10	5	35	28.57
9	Feather (Correct)	Blankets	Curtains Lace	Quilt		
	8	16	3	8	35	22.86
10	Blankets (Correct)	Quilt	Feather	Bedspreads		
	18	3	10	4	35	51.43

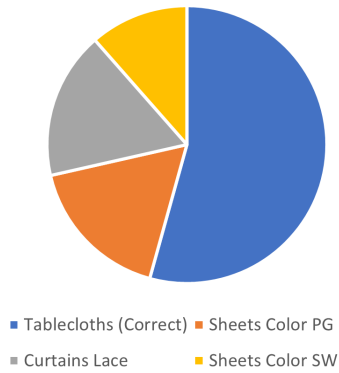
APPENDIX C



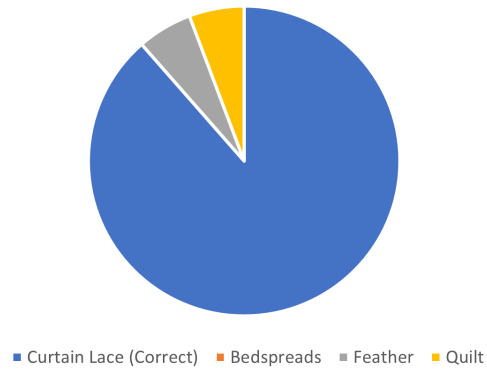
APPENDIX D



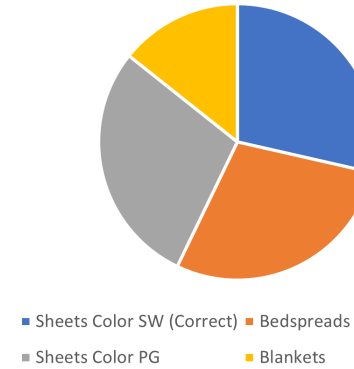
Question 6



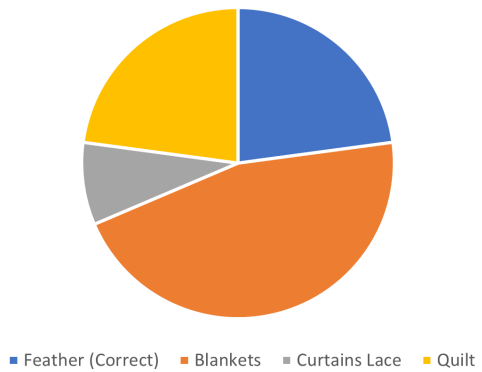
Question 7



Question 8



Question 9



Question 10

