

Bridging Academia and Industry: *Experiential Lean Learning for Tomorrow's Leaders*



LEARNING SESSION PRESENTERS

Lisa Eshbach - Professor, Operations and Supply Management
Business Innovation and Lean Center Coordinator
Ferris State University

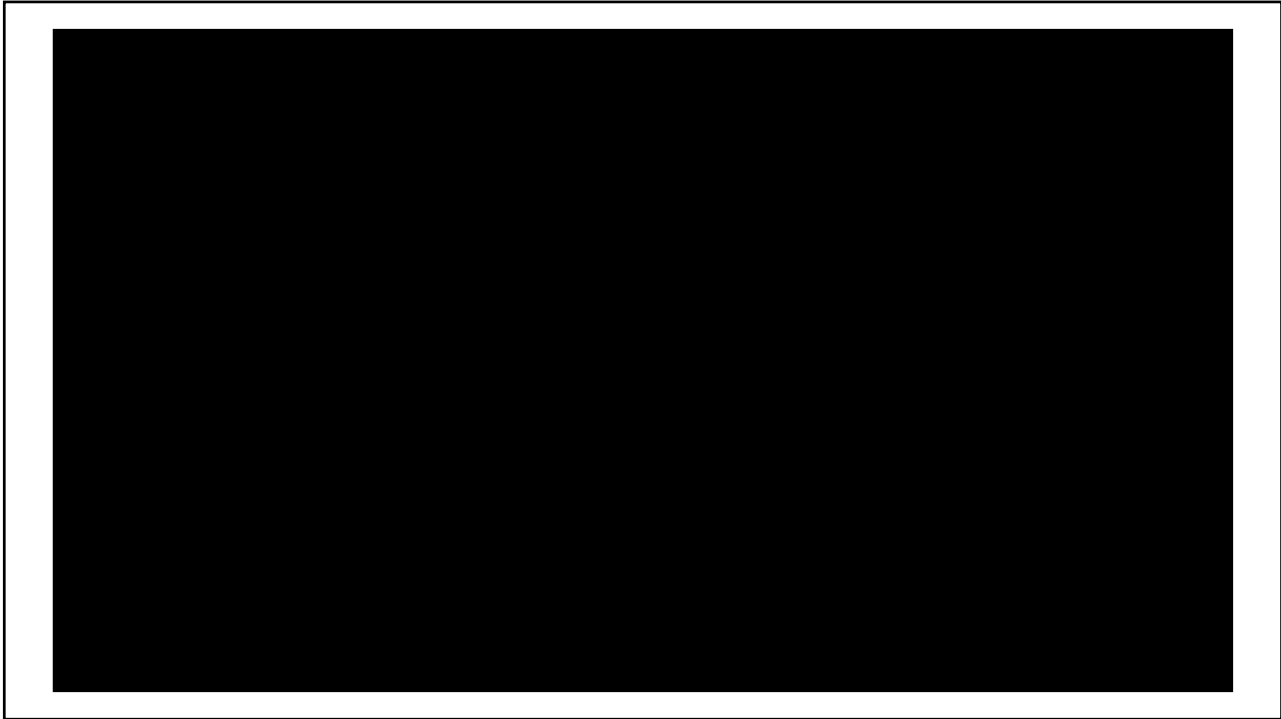
Dennis L. Wade - Director Pawley Lean Institute/Adjunct Professor Oakland University

AGENDA

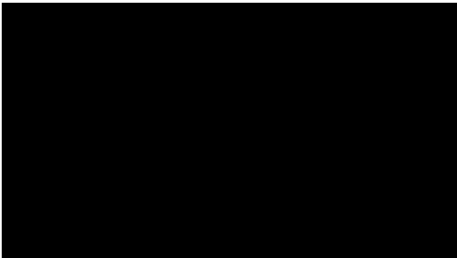
- LEARNING SESSION ACTIVITY
- VIDEO MESSAGE
 - **OU: DENNIS PAWLEY**
 - **FSU: LOGAN JONES AND ALEX CARTWRIGHT**
- PRESENTATION (DENNIS AND LISA)
- STUDENT AND PARTNER VIDEOS
- WRAP UP AND QUESTIONS

DENNIS PAWLEY (FOUNDER OF THE PAWLEY LEAN INSTITUTE) VIDEO MESSAGE

- Founder – Pawley Lean Institute
- Former Executive President – Manufacturing (Chrysler)
- Former Chair/Trustee and Trustee Emeritus– Oakland University
- Distinguished Alumni Service Award – Oakland University
- Honorary Doctoral Degree – Oakland University
- Automotive News Executive All Star (5 Times)
- Max M. Fisher Outstanding Philanthropist (2004)
- Industry Magazine – Hall of Fame
- Shingo Manufacturing Award



Business Innovation and Lean Center – Ferris State University

- Logan Jones – College of Business Dean
- Alex Cartwright – Management Department Chair
- Dean & Chair 

- Oakland University/Pawley Lean Institute
- Ferris State University/Business Innovation and Lean Center

- Placing students into collaborative, project based, process improvement initiatives with local organizations

- Traditional Lean Education Model
 - Broadly addressed in Operation Management or ISE Coursework
 - No/Sporadic Lean Specific Courses are being Offered at University Level
 - Some Lean Coursework tends to be Elective versus Required Coursework

- Paid Internships may be Lean or Partially Lean Focused

Ferris State University

- Experiential Student Learning Model
 - Lean Courses – College of Business
 - Operations and Supply Management Major
 - Lean Systems Certificate & Minor
 - Lean Six Sigma Green Belt Certification
 - Career Readiness
 - Mentee/Mentor with Industry
 - Speaker Series
 - FSU Strategic Plan

Oakland University

- Experiential Student Learning Model
 - Lean Courses (Schools of Education, Engineering, and Business)
 - Undergraduate/Graduate Level Coursework
 - Lean Green Belt Certificates/Minors
 - Senior Design Coursework (Engineering)
 - High School Workshops
- Career Readiness
- Scholarships (Undergraduate/Graduate)
- Pawley Lean Institute (Strategic Plan)
 - Support Academic Coursework Development
 - Support OU Lean Projects
 - **Student Engagements**

Pawley Lean Institute/Oakland University

- Relationships Developed with Organizations for Lean Internships
 - 140+ Internship Placements supported by the Pawley Institute since 2015
- Build No-Fee Student Training Opportunities (LEI/Lean Learning Center)
- Offers Scholarships at the Undergraduate/Graduate Level
 - Students must demonstrate Lean Project and/or Coursework
- Partnered with Organizations for Lean Projects for ISE Senior Design Course
- Students participate in On Campus Lean Projects (Independent Study)
- Lean Graduate Certificate serves as Cognate for Ed.D. Program
- Lean Training/Workshops outside of University Scope
 - Lean Enterprise Institute (Workshops)
 - Lean Learning Center (Training Sessions)
 - Seats provided at No Cost to Students
- Creation of Paid Community Service Lean Internships (Project Based)

Total Projects since 2014: 160+ (face to face and online)

- Since 2021 - 75 Projects
- Industry Partners
 - Off campus – Organizations
 - Healthcare - Spectrum/Corewell Health
 - Manufacturing - Gentex, General Mills, Haworth, MHS Global, Pratt and Whitney AutoAir, Tubelite, Yangfeng Automotive
 - Restaurant - Fatty C's Doghouse
 - Non-Profits - Angels of Action, North Kent Connect, Lakeview Area Veteran's Monument, Habitat for Humanity Restore
 - On campus – Ferris State University Departments
 - Service - Rock Café, Bookstore, College of Optometry, College of Pharmacy, IT, eLearning, Racquet and Fitness Center, Katke Golf Course, Housing, UREC



Collaborations

- Michigan Lean Consortium Lean In Academia CoP
- Conferences
 - Lean Higher Education Global Conference
 - Midwest Supply Chain Management Conference
 - Lean Summit
- FSU Classes
 - Design – BILC Brand Logo Kit
 - Graphic Media Management
 - Case Writing and Research Course
 - Interdisciplinary Experiential Projects

Support

- Industry – Gentex Corporation
- FSU 1D4Dawgs Annual Campaign



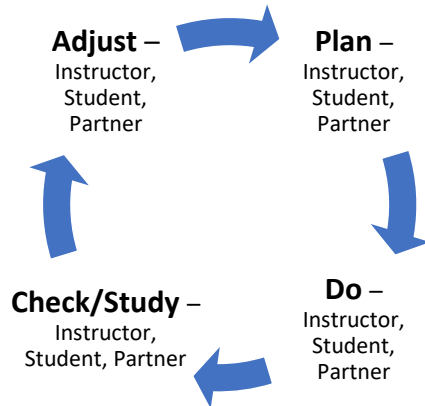
- Oakland University - Lean Community Service Internships
 - Sponsorships with the Business Community
 - AIC Equipment, AT&T, Bosch Foundation, Jabil, Lean Enterprise Institute
 - Work Projects Specifically with Non-Profit Organizations
 - Fleece and Thank You, Forgotten Harvest, Humble Design, Leader Dogs for the Blind, Rose Hill Center
 - Students work as a (2-Person) Student Team with Mentors
 - A mentor from OU and a mentor from Industry for each Team
 - Students earn \$2500 per Project
 - Students lead a Midpoint and Final Presentation



- Oakland University Community Service Internships
 - Benefits
 - Business Partners supplement their Community Service Activity
 - Business Partners attend the Student Presentations
 - Community Service Organizations benefits from Project Recommendations for Process Improvement
 - Students add Value to Resume and earn \$\$\$
 - Students see Value in Community Service
 - Pawley Lean Institute fulfills Missions
 - Summer Program now in Place (Students earn \$5000)



Student Team Experiential Project Model



Benefits

Students

- Career Preparation
- Engaged Learning
- Enhanced Academic Experience and SKA's

Partners

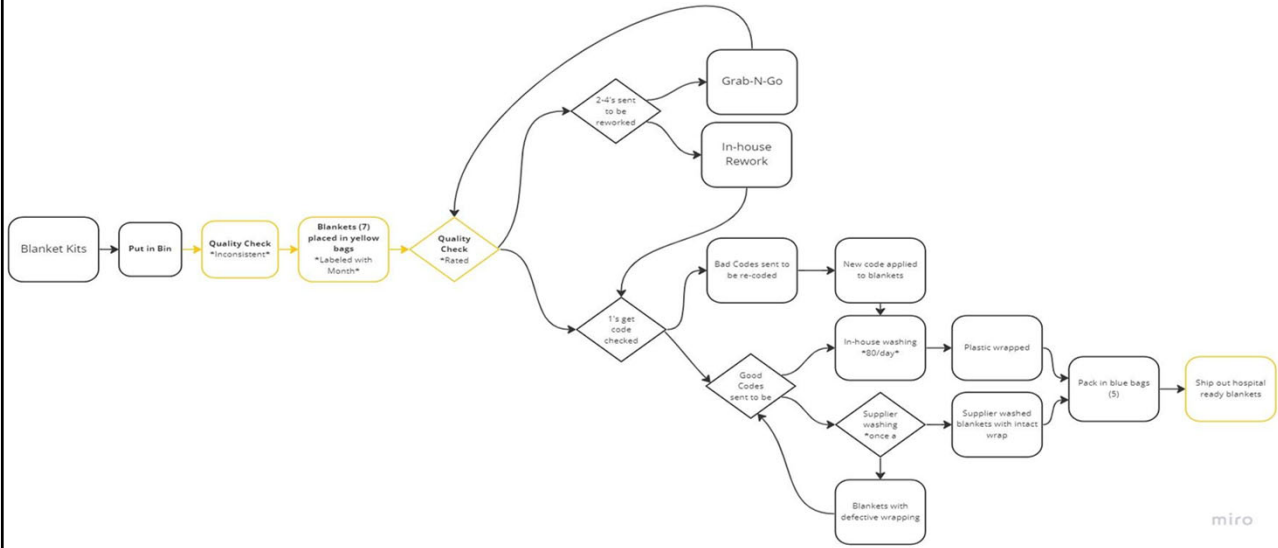
- Student Opportunities
- Operational Efficiencies

Business Innovation and Lean Center

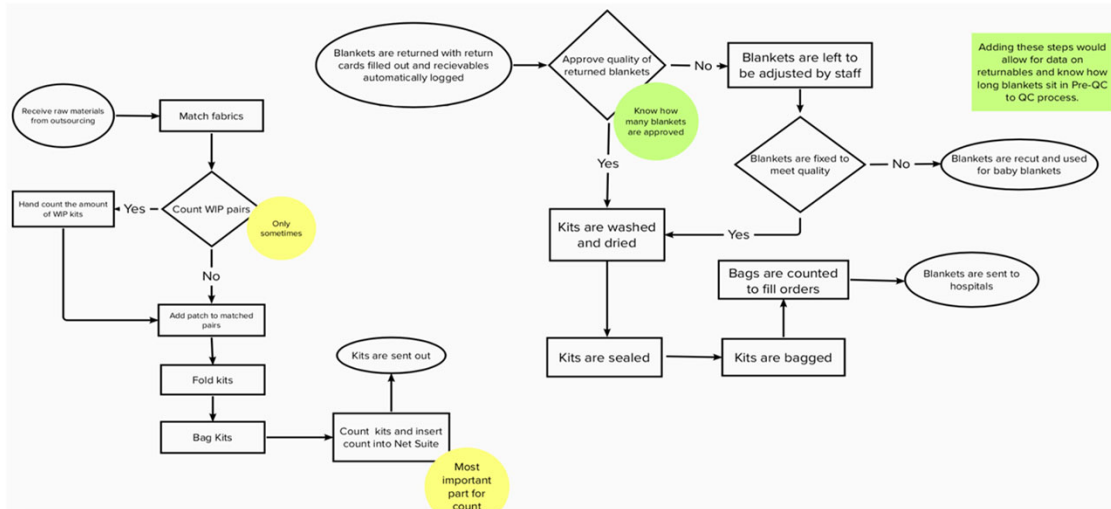
- Supports Mission and FSU's Strategic Plan



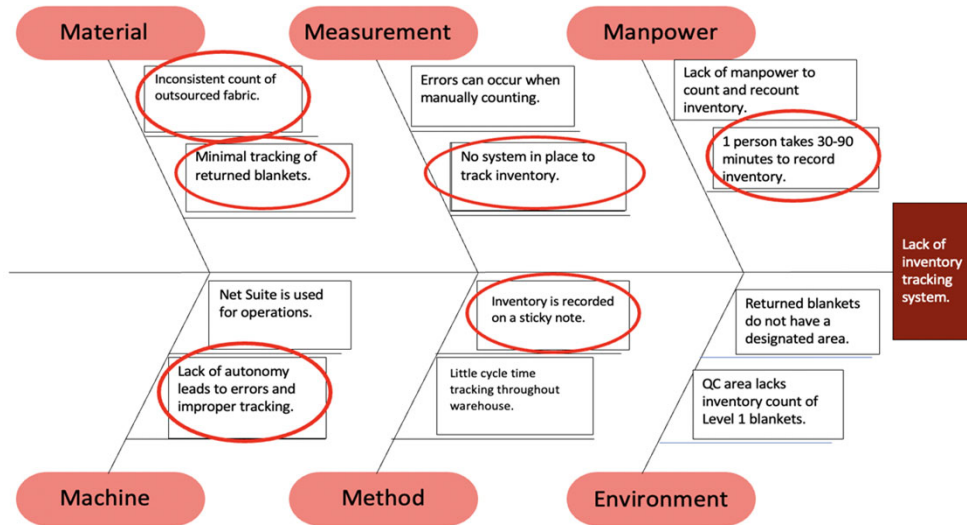
Process Map



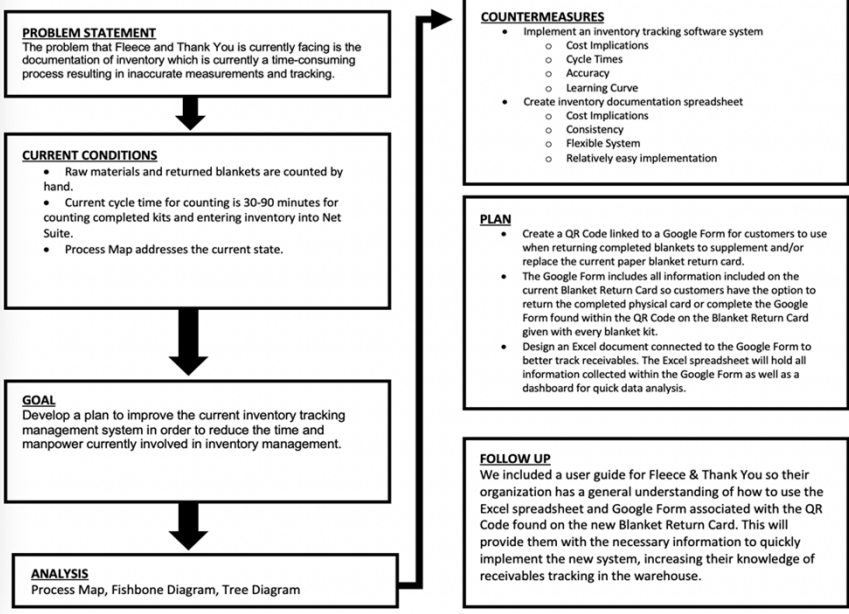
Updated Process Map



Fishbone Diagram



Completed A3

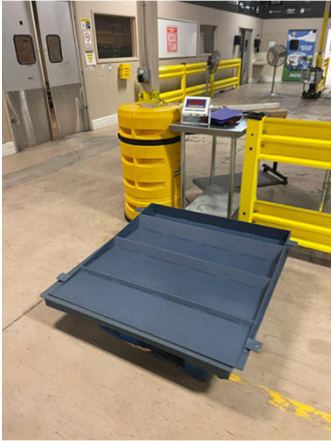


Problem Statement

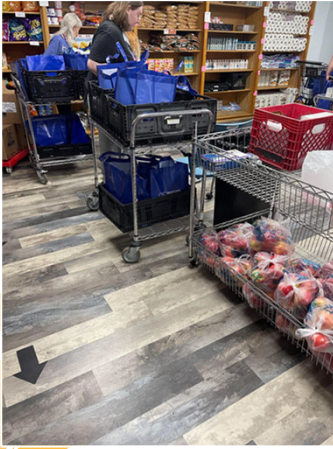
Client-choice pantry operations are not currently set up to promote the most efficient flow of activities and time optimization



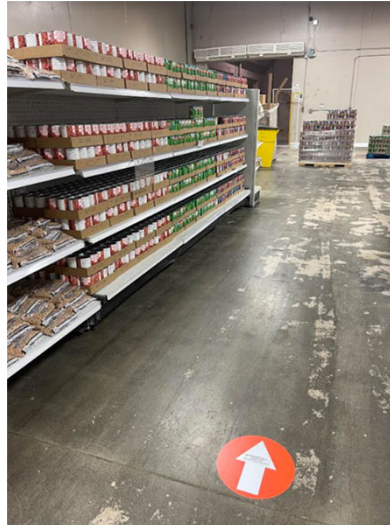
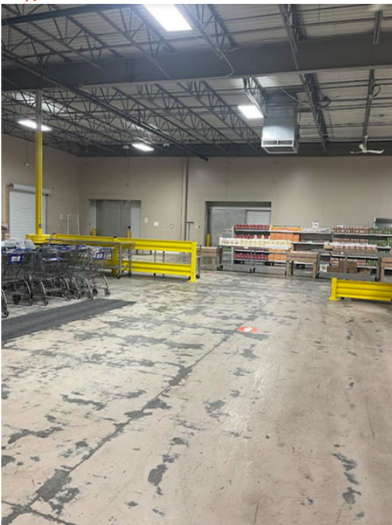
The Facility and Set-Up (Before)



Other Client Choice Pantries




Now: The Facility Set-Up



Problem Specifics	Addressing Problem
Inefficient inventory tracking	Excel sheet to depict what food, and how much of it, is leaving the warehouse
Confusion with what food/how much food to pick	Client assistants to walk through the shopping process
Line backups	Arrows directing clients, strategic location of scale and car loading area
Volunteer role confusion	Made 'Client Assistant SOP' document

Indoor Traffic Flow

- One issue faced was that the carts would get backed up at the weigh station while waiting on clients to pull their cars around to the back for loading.
- This made it very difficult to keep clients moving through.
- Limits how many clients can be brought through at a time (capacity restriction).
- The constraint is due to lack of available space next to weigh station and the location of the scale.



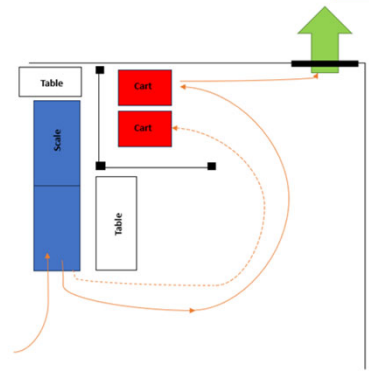
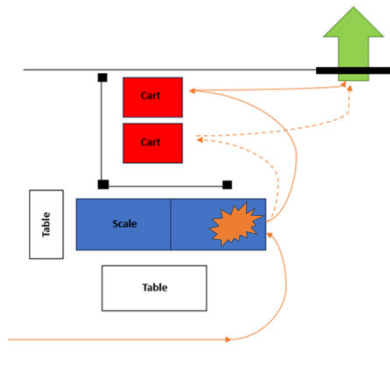
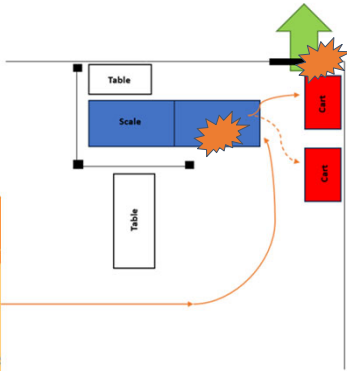
Where carts became backed up at

Indoor Traffic Flow (cont'd)

Original: Trip hazard at weigh station ramp. Bottleneck at back door to load cars.

Proposed: Trip hazard still exists at ramp because it extends into walkway.

Updated: Elimination of trip hazard by placing out of walkway and behind the register table.



Outdoors Traffic Flow

Some recommendations that are easy to implement and can have an immediate impact are as follows:

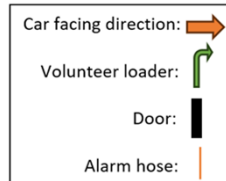
→ Traffic Flow:

- ◆ Signs to point clients to the proper area for food pick up.
- ◆ Painting lanes on the ground for clients to back into (see below example).
- ◆ Reminders to stay in vehicle while volunteer loads the food.

→ Alert Volunteers:

- ◆ Driveway alarm such as used by auto service stations.

\$129⁹⁷



Habitat for Humanity ReStore – Lake County



Helping the Environment

By repurposing gently used goods, we are helping to keep waste out of local landfills.



Promoting Savings

Keep money in your pocket by purchasing gently used home improvement goods.



Spreading Kindness

ReStores strengthen local communities by encouraging charity and volunteer work.

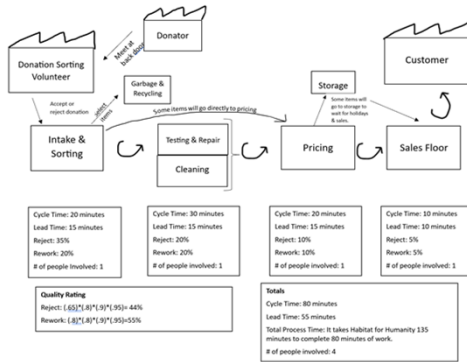


Habitat for Humanity Restore Donation, Storage and Retail

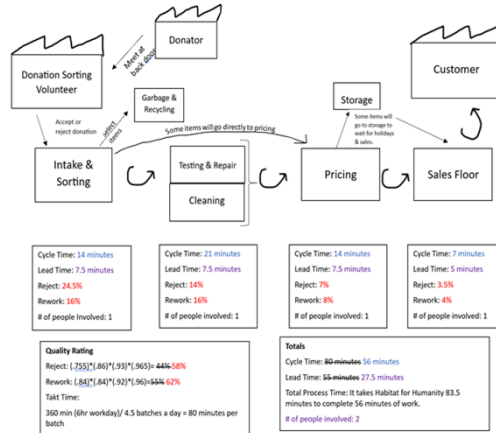


Value Stream Maps - Habitat for Humanity Restore Donation Process

Current State Map



Future State Map



FMEA – Habitat for Humanity Restore Donation Process



Process/Product Name: Donation Intake Process		Prepared By: Habitat for Humanity Restore Student Team					
Responsible: Habitat for Humanity		FMEA Date (Orig.): October 10, 2020 (Rev.):					
Process Step/Output	Potential Failure Mode	Potential Failure Effects	Potential Causes	Current Controls	Action Recommended	Resp.	Actions Taken
SEVERITY (1-10)	OCURRENCE (1-10)	DETECTION (1-10)	RPN	SEVERITY (1-10)	OCURRENCE (1-10)	DETECTION (1-10)	RPN
Defect: Items are inspected	Items not eligible for donation could be sent on through the process.	Customers could purchase broken goods.	Workers could be new/unfamiliar with the process.	Training new workers.	Visual aid to help with inspecting products.	Management	Visual board is posted in the process area.
Defect: Items could be discarded	The item would not reach the sales floor for purchasing.	Getting distracted/off task.	Having a second worker confirm that items are for the out process.	Visual aid to help with inspecting products.	Management	Visual board is posted in the process area.	
Items are tested	Tested item could not work/need repairs.	Item may have power but not work properly.	Testing station has two outlets.	Testing station with all possible power resolutions.	Management	New power adapters are provided.	
Items are cleaned	Items may not be cleaned enough. Items could still be dirty.	Uncleaned items on the sales floor will affect the buyers decision making.	Bad cleaning technique.	Items are looked at after cleaning to assure it is done correctly.	Teaching Proper cleaning techniques to all workers.	Employees at the restore.	New training for employees.
Items are priced and sent out to the sales floor	Items not moved to the sales floor in a timely manner.	Back room clutter and items not getting to the customers.	Not enough time to move the items.	Once the items are priced they are taken to the sales floor when possible.	Check the price/stockable once every hour.	Employees at the restore.	Hourly checks of the pricing table.

A3 – Habitat for Humanity Restore Donation Process

BACKGROUND: What are you talking about and why?

- The donation process at Habitat for Humanity is full of uncertainties on when the donations will arrive and how much. This leads to a buildup of donations due to the limited retail space, and the processing space is equally becoming too unorganized to move around in.
- The specific measurement that we are looking to improve is the amount of time it takes to process donations.
- This needs to be addressed because it is the sole purpose and lucrative part of the business. The area of operation is a small town on the poorer side and most employees are volunteers which leads to a huge lack of manpower.
- Improving the donation process will help reduce time and allow them to get items on the retail floor faster. This will allow them to accept more donations throughout the year and in turn help their community more.

CURRENT CONDITIONS: Where do things stand now?

- Current lead time is 6,795 minutes or 6 days and 2.5 hours for each "batch" of donations. We broke the times down into batches because the items and quality of donations are so uncertain, so this allows for some uncertainty in the estimation.
- Currently the process steps include donations drop off, sorting, cleaning if necessary, pricing, moving to storage if necessary, and finally moving to retail space.
- When visiting, it was clear that there is a lot of disorganization in the process room and storage rooms which is causing the gap in performance.
- Items have been in storage for more than 3-4 months at a time before being placed on the floor for sale.
- Below are the current state map conditions.

Item Category	Current State	Target State	Item Category	Current State	Target State	Item Category	Current State	Target State
LT	334min	13 min	LT	48h	48h	LT	48h	48h
Reject	35%	35%	Reject	45%	45%	Reject	10%	10%
Rework	35%	15%	Rework	10%	10%	Rework	10%	5%

GOAL: What specific outcome is required?

- The overall goal is to reduce lead time by 50% for the donation process. So instead of only processing 45 batches throughout the year, they can process 90 batches with the lead time reduction.

ANALYSIS: Why does the problem as need exist?

- Problems: Donations are not being processed fast enough
 - Why? There are too many items to keep up with
 - Why? Items are dropped off whenever without warning
 - Why? There is no defined system put in place
 - Why? Lack of resources and manpower.
 - Why? Inorganization of spaces and human capital

RECOMMENDATION: What do you propose and why?

- Introduce a standardized work for employees and volunteers to follow while processing donations
 - Standardize methods and operations for different items. This will include safety measures, cleaning checklists, and training frameworks.
 - Hard to follow because of the uncertainties, but still provide a good frame of reference when needed.
- Implement 5S and visual controls to help organize items in storage and start to create a rotation system for displaying items.
 - Identifying the different areas for larger items to be stored and zone them off based on size availability.
 - Place visual controls in place to easily identify the zoned areas.
- Both recommendations will be very low in cost to implement, but the payback would be very beneficial. For standardized work, the only cost is taking employees away from their normal duties to train and implement the practices.
- Overall we recommend 5S and visual controls to help reduce cycle and lead times throughout the donation process. Standardized work should be implemented as well, but right now may not be the best time due to the uncertainties.

PLAN: How will you implement it (Who and How)?



- We will organize by starting with the sales floor and moving back to the storage buildings. We want to be able to get the sales floor in the best shape, along with reorganizing the storage buildings so things are easier to find and get priced quicker.
- The support we will require is an effort from the staff in making our plan work along with us going out there and starting the process for them with organization and using different strategies.
- The staff will oversee making sure the plan is implemented and sustained. For this to work the staff will have to be the key components of it.
- Measuring the effectiveness will come with checking in on how they are doing with the new process. If they mention that it speeds things up and is easier to locate and get items on the shelf for sale, then we will know it was a success.
- Progress will be reviewed by their manager. As he will have our whole process and what we wanted to achieve and how it will be achieved. She will need to review and ask her staff how they feel about the new process.

FOLLOW UP: How will you ensure ongoing PDCA?

- How will be able to know if what we implemented has been working, will be to get in touch with the people in charge to see how the process has been going. Asking questions as if it has helped or changed how fast things happen.
- When talking to Habitat we will be able to ask if the process we implemented has helped them. The most important part in making sure it was a success to them and helped their process.
- We will know if we reduced the gap in performance by knowing if the time to get things out on the sales floor has improved, if they are able to get it down from weeks to days then we know it was a good job.
- The biggest issue we feel that will happen is the lack of time and manpower, not having the time or manpower is really the only way this can fail. That will be something we anticipate happen but know there may be other minor hiccups.
- As we will be able to share how we were able to implement our ideas and support doing it.

Job Breakdown Sheet – Habitat for Humanity Restore Donation Process



Job Breakdown Sheet			
Description of Task	Donation Intake Process	Parts (part description)	List Common Key Points. Items must be inspected, if items need to be tested they are moved to the testing table, items are cleaned, then placed in a bin on the pricing table.
Tools & Supplies Required:	Tools & Supplies Required:	Tools & Supplies Required:	Tools & Supplies Required:
Safety Equipment Required:	Safety Equipment Required:	Safety Equipment Required:	Safety Equipment Required:
Important Steps	Key Points	Reasons	Training Aid: (Put hand sketches, diagrams, parts, or layouts here. Insert a digital picture if available)
WHAT?	HOW?	WHY?	
Donations are inspected.	1. Donations are looked at carefully to determine if they are good to sell. 2. If an item needs to be tested it is placed on the testing table. 3. If it doesn't need testing, place it on the pricing table.	<input type="checkbox"/> The items need to be inspected before going out to the sales floor. <input checked="" type="checkbox"/>	
Non-donatable items must be moved.	1. Non-donatable items are placed on the out-process area.	<input type="checkbox"/> Items that cannot be sold are placed in the out-process area to be thrown out or repurposed.	
Items that need testing are tested.	1. Items that use electricity or have moving parts must be tested to assure they work.	<input type="checkbox"/> Donation must work before they are sold.	
Items must be cleaned.	2. Donations need to be cleaned.	<input type="checkbox"/> Items cannot be sold dirty.	
Clean and tested items are moved to the pricing table.	1. Items are placed in a bin on the pricing table. 2. Once the bin is full it is moved down to the table.	<input checked="" type="checkbox"/> By placing items in the bins on the table will make the process flow smoothly.	
Priced items are moved to the sales floor.	1. The items should not stay on the pricing table once they are priced. 2. They need to be moved to the sales floor immediately.	<input checked="" type="checkbox"/> Priced item should be moved to the floor ASAP. This will ensure product doesn't clutter the back room.	
Key Point Reminders:	<input type="checkbox"/> Critical Check or Inspection <input checked="" type="checkbox"/> Quantity Check <input type="checkbox"/> Could figure the person	<input checked="" type="checkbox"/> Makes the job easier	Owner of the document Page of Rev. of Date:

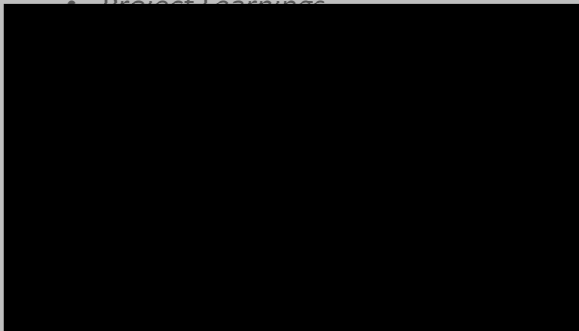
If the person hasn't learned, the instructor hasn't taught.

Job Breakdown Sheet– Habitat for Humanity Restore Donation Process



FSU Students & Partners Video (3:00) -

- Project Overview
- Project Learning





- Open Discussion
- The Group Activity versus the OU/FSU programs
- Connecting Your Organization with Universities

- Questions
- Available after Lunch (Community Learning Center)



Dennis Wade

- wade@oakland.edu
- oakland.edu/lean

Lisa Eshbach

- lisaeshbach@ferris.edu
- ferris.edu/business/business-innovation-lean-center

