An Immersive Lean Experience

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Welcome!

Fire exits
- In case of fire, please walk to the nearest exit.

Unsafe act or condition
- If you see an unsafe act or condition, please notify the instructor.
Today’s Objective

In this session we will:
• Understand student involvement in Lean at Michigan Tech
• Explore student immersion experiences in Lean at Michigan Tech
Lean...

- Empowers employees and students to create effective and efficient processes so students can focus on learning and faculty on research.
- Practices improve safety, increase quality, increase morale, and decrease costs.
- Is deployed at Michigan Tech through a central office, accessible to all employees and students.
Lean Definitions

• **Kaizen**—a Japanese term that means “improvement” or “change for the better.”

• **Kaizen Event**—A problem solving activity that engages a team in finding the **root causes** of a problem and/or **identifying waste** in a process, followed by developing **experiments** to improve the system to the mutual benefit of **customers** and employees.

• **Gemba**—The place where the work is done
The Student-Centered Lean System at Michigan Tech
Office of Continuous Improvement

- Director of Continuous Improvement
- Student Process Improvement Coordinators (PICs)
- Volunteer Lean Facilitators
- Organizationally located in Vice President for Administration
Director of Continuous Improvement
Sets the tone and pace for Lean activities on campus

- Leads and supports process improvement work
- Teaches and coaches Lean
- Coordinates campus Lean activities
- Advisor for Leaders in Continuous Improvement student organization
Leaders in Continuous Improvement
Student Organization

• Background
• Learning Lean Concepts
• Partnerships
Leaders in Continuous Improvement
Student Organization

- Established in 2013
- 50 members
- Teach our members Lean and continuous improvement concepts through:
  - Hands-on Activities
  - Industry Trips
  - Guest Speakers
  - Networking
Leaders in Continuous Improvement
Hands-on Activities
Leaders in Continuous Improvement
Industry Connections
Leaders in Continuous Improvement
Industry Trips

PETTIBONE
BARAGA, MI

BOSS SNOWPLOW
IRON MOUNTAIN, MI
Leaders in Continuous Improvement

Industry Trips

THE MUFFLER SHOP
HOUGHTON, MI

PARKER HANNIFIN
MANITOWIC, WI
Leaders in Continuous Improvement
Non-Profit Projects

- 31 Backpacks
- Little Brothers Friends of the Elderly
- Husky Pantry
Leaders in Continuous Improvement
Valuable Skill Set

• Lean knowledge is applicable to all areas of industry

• Employers are seeking students with this skill set
  • Continuous improvement and Lean expertise provide students with a competitive advantage
Leaders in Continuous Improvement
Most Improved Student Organization
of the Year Award 2017
Leaders in Continuous Improvement
Building a Partnership

Companies
• Access to a skilled group of students
  • Lean knowledge
• Industry Projects
  • Members to assist with improvement events
• Internship Opportunities

Members
• Guest Speaker Events
• Tour company facilities
  • Gemba Walks
  • Industry Trips
Student Process Improvement Coordinators (PICs)

Objectives

- Description of Student Employment
- Standard Work
- Projects
- Student Training
- Kaizens
Student Process Improvement Coordinators (PICs)
Michigan Tech student employees in the Office of Continuous Improvement

• Assist with the planning, data collection and facilitation of kaizen (improvement) events
• Work hands-on, side-by-side with employees and students on projects using Lean tools and methods
• Prepare presentations, blog posts, newsletter articles, and tweets related to continuous improvement concepts
• Highly sought after by industry!
Student PICs
Standard Work

- Do our work/improve our work
  - Question status quo
  - Develop metrics
  - Run experiments
  - Adopt/Adapt/Discard/Try again
- No-Blame environment
- Questions are encouraged
Student PICs
Projects

- Information Sessions
- Expo for first-year student orientation
- Michigan Lean Consortium conference booth
- Lean Bronze certification question bank
- Student-Student Training
Student PICs Training

• Created an interactive training using Canvas, the University’s course management system
  • Accommodates all learning styles
    • Hands-on activities
    • Videos
    • Readings
    • Written reflections
  • Coaching by EPICs
    • Integrated check-ins
    • Shadowing
• Currently on fourth improvement loop
  • Part of the training is to provide feedback
Student PICs

Kaizens

- Coordinate events with the Lean facilitator, team leader, and team members
  - Right people, right place, right time, and right materials to be successful
- Maintain kaizen hopper and Access database
  - Create standards
  - Improve standards
- Summarize events for inclusion in Board of Trustees Annual Report
- Example Improvements
  - Partner Engagement, Parade of Nations, Commencement
  - Tied to the University’s strategic goals
Michigan Tech Students

Students can engage in Lean at many levels.

• Take Lean academic courses
  • ENT3982, ENT3983, MET4510, MEEM5990
• Join Leaders in Continuous Improvement (LCI) student organization
• Request workshops or kaizens for their student orgs or enterprise
• Participate in university kaizens as a customer or outside eyes
• Experience Lean through student employment in areas with strong Lean cultures, in the community, and on internships
Let’s Build a House

• 13 “story” house: Clubs are structure, Hearts are mechanical, Diamonds are trim
• Must lay down in a column, in order, Ace – King
• Must lay down club first, before corresponding heart, which must come before corresponding diamond
Round 1: Practice, then repeat for baseline time
• Lay down background sheet and spread cards in a loose pile on top, face up
• No talking or gesturing
• Everyone works to build the columns
• Record time

Round 2: Sort
• Remove spades and junk cards
• Spread remaining cards in a loose pile, face up, on top of background sheet
• No talking or gesturing
• Build columns (timed)
• Record time

Round 3: Shine
• Remove background sheet
• Spread cards in a loose pile, face up
• No talking or gesturing
• Build columns (timed)
• Record time

Round 4: Set in Order
• Spread cards in a loose pile, face up
• Push cards into “suit”-based piles, until each suit is in its own smaller, loose, mixed-up pile
• No talking or gesturing
• Build columns (timed)
• Record time

Round 5: Create a Standard
• Talking okay now
• Discuss best way to organize cards, then implement
  • 5 minutes total for both discussion and implementation
• Build columns (timed)
• Record time

Round 6: Sustain
• Discuss in your team how you might sustain this improvement with a continuously changing employee population
• Report out to group
Lean Principle:
Improve Flow by Eliminating Waste

- Flow = a product, service, or even you!, moving from one step to the next without stopping
- Waste is anything that gets in the way of flow, like rework, waiting, movement, or excess inventory
- 5S, a workplace organization tool, is a Lean shortcut to improve flow, eliminate waste, and sustain improvements
- 5S = Sort, Shine, Set in Order, Standardize, and Sustain
Future Directions

• Organizational Process Excellence Immersion Lab
  • An active learning environment featuring physical simulations of manufacturing and service processes for Lean experimentation

• Leanasium
  • An exciting setting to hone individual and team problem solving skills

• Minor in quality and continuous improvement
• Lean internships from industry
Continuous Improvement Website for students
www.mtu.edu/improvement/students

Continuous Improvement

On-Campus Learning Opportunities and Resources
Among the many other ways to get involved with Lean here on campus, there are also ways you can personally delve into the world of continuous improvement in order to better your processes and improve your organizational skills.

The Lean Library
Within our office we have a library filled with books on Lean, Six Sigma, organizational tools, and systems thinking. If you are looking to personally expand your knowledge on continuous improvement or are looking for a good informational text to read, come check out a book!

Continuous Improvement Blog
Weekly the Office of Continuous Improvement posts to our improvement blog on tools, tips, and tricks on how to stay organized. Giving insight on leadership and lean culture, the blog is an excellent
Today’s Objective

The objectives for today were to:

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- Explore student immersion experiences in Lean at Michigan Tech
What questions do you have?