Office of Continuous Improvement

Annual Report

Fiscal Year 2015

This report is a summary of the continuous improvement activities

on the campus of Michigan Technological University for the 2015 fiscal year.

Office of Continuous Improvement (OCI) Mission Statement

The mission of Michigan Technological University's OCI is to provide exceptional value to the university by spreading a continuous improvement culture using Lean principles administratively, experientially, and academically through faculty, staff, students, and the Lean community.

OCI Activities for Fiscal Year 2015

OCI conducts activities in three areas. First, it advises, encourages, and supports students and the Leaders in Continuous Improvement (LCI) student organization. Second, OCI provides consultation and education on Lean thinking to the academic units as they create a Lean culture and curriculum. Third, it forms a central hub for training, consultation, and improvement activities to enrich and optimize the university workforce and the community. The work of OCI directly supports the major goals in Michigan Tech's Strategic Plan by contributing to multiple subgoals. For more information on the items listed below, please see the Board of Trustees Updates and the Summary of Rapid Improvement Events.

Advise, encourage, and support students and LCI.

- Provided access, information, and guidance to a student team as they completed a continuous improvement project for a university course
- Included students in campus Rapid Improvement Events
- Provided advisor, support, and resources for LCI
- Presented Lean basics to American Society of Mechanical Engineers (ASME) student organization at their weekly general meeting
- Facilitated Rapid Improvement Event for ASME student organization
- Assisted LCI with community partnership project
- Presented workshop on Lean Leadership to students in HuskyLEAD seminar
- Guided, supported, and trained student process improvement coordinators to work collaboratively with campus Lean facilitators

Provide consultation and education on Lean thinking to academic units.

- Facilitated Rapid Improvement Events in support of faculty working to create the infrastructure to support the development of a National Science Foundation ADVANCE research grant, the Chemistry Department's graduate student admissions process, academic advisor documentation, and the Opie and Van Pelt Library
- Facilitated strategic planning for Engineering Fundamentals department

Develop and engage our workforce and community.

- Trained new cohort of 10 campus Lean Facilitators
- Managed Copper Country Lean Group meetings
- Developed Lean module for UAW Certification Program
- Delivered Basic Lean Principles workshop to Michigan Tech employees
- Partnered with Michigan State University's Demmer Center for Business Transformation to mutually benefit and grow both Lean programs
- Contributed to Lean community via social media, including twitter and a blog with frequent guest bloggers
- Facilitated campus Rapid Improvement Events, as shown below
- Delivered Visual Management Workshop
- Facilitated strategic planning for Keweenaw Economic Development Alliance
- Brought in distinguished guest to provide lectures and workshops to the campus and community
- Presented on Lean and continuous improvement topics to a variety of campus organizations
- Supported monthly report outs for Auxiliary Services
- Provided continuing education and training to campus Lean Facilitators

MichiganTech

Continuous Improvement Using Lean Principles
Fiscal Year 2015 Annual Report

Summary of Rapid Improvement Events

Event Name	Sponsoring Department	University Strategic Goals	Description	Results
Office Supplies Inventory	Vice President for Administration	1.3.1 1.3.3	Supplies were ordered and maintained in several closely located offices, leading to more inventory than necessary, redundant space requirements, and duplication of ordering effort.	1) Consolidated office supplies to single area reducing time spent to gather supplies by over 20 percent. 2) Organized over 25 supply items using a proven continuous improvement methodology. 3) Created visual controls for future accountability. 4) Reduced three person task of ordering supplies to single person which eliminated issue of duplicate orders being placed and an annual waste of over $200.
Graduate Student Admissions Process	Chemistry	1.1.1 1.2.2 2.3.1	The graduate school application process in the Chemistry department was cumbersome, time-consuming, and inefficient, leading to wasted time and potential errors. Additionally the application decision process was unclear, leading to status notification delays.	1) Established a system of preparation for electronic review which is efficient and keeps reviewer comments with the application. 2) Formed new system that allows for preliminary summary data to be entered only once, instead of multiple times, saving over 80 hours of work yearly. 3) Mapped a clear procedure for application decision and follow-up actions.
5S for Celine Grace	Chemistry	1.3.1 1.3.3	Clutter and piling of papers was causing excessive time spent searching for items, loss of items, and frustration.	1) Organized over 15 cubbies and boxes while eliminating waste to increase floor space for an improved ergonomic working environment. 2) Created monthly audit to support sustainment of improvement efforts.
KEDA Strategic Plan	Community	3.2.4	The Keweenaw Economic Development Alliance (KEDA) was beginning their strategic planning process and wanted facilitator assistance to plan their plan.	1) Developed plan for creating KEDA's strategic plan.

Advance Grant Kaizen #1 Career Flow Chart	Provost and Vice President for Administration	1.1.2 1.2.3 1.3.1 3.1.4	Michigan Tech has experienced a skewed male to female faculty ratio and potential gender-based disparities in selection, tenure, and promotion rates. Attrition at each stage of the career process was a well-recognized concern. Also faculty at all stages reported a lack of specificity in expectations, requirements, procedures, and support as well as a lack of transparency in evaluation processes and determinations.	1) Mapped faculty career paths within the University, including both a current and future state. 2) Performed gap analysis to identify pipeline leaks, waste, and missing metrics in order to fully understand the current state and prioritize future improvement events.
Student Health Insurance	Benefit Services	1.2.1 1.3.1	Students were confused about health insurance requirements, leading to misinformation being provided to Human Resources. This led to holds being inappropriately placed, removed, or waived.	1) Updated website to be more intuitive and provide needed information to students without being cluttered. 2) Streamlined process of obtaining insurance from going across 4 departments on campus to 1. 3) Performed root cause analysis of communication problems leading to single-source, current information being relayed to students across all avenues of contact.
Academic Advisor Handbook	Provost	1.1.1 2.1.1 2.1.3	Advisors were confused and frustrated with documentation which was maintained in multiple locations. The poor system led to challenges for advisors, as they tried to find the correct documentation to share with their advisees in a timely manner.	1) Decreased number of places items were kept from 4 to 1 yielding a decreased time to find a given document from 2.4 minutes to 1.5 minutes. 2) Added visual controls to audit information every semester to keep files up to date and organized. 3) Retired over 100 pages of outdated forms.
Open Enrollment Process Mapping	Human Resources	1.1.2 1.3.1	Different areas within Human Resources had different tasks associated with Open Enrollment which impacts approximately 1400 employees yearly. There was no single area that housed this entire process and no clear understanding of responsibilities.	1) Reduced labor costs with a clearly defined process with responsibilities and appropriate steps identified and documented for a smooth coordination. 2) Identified 13 improvement projects.
Employee Parking Violations	Facilities Management	2.2.4 2.2.6	There was no process to enforce employee parking violations for 38 employees with over $500.00 in parking fines.	1) Performed current state process mapping of parking violations. 2) Identified root causes leading to violations not being paid. 3) Developed and prioritized countermeasure.

Advance Grant Kaizen #2 Pre Tenure	Provost	1.1.2 1.2.3 1.3.1 3.1.4	An explicitly delineated map of successful progression of newer faculty was needed, with an emphasis on research intensive expectations and retention of those faculty once successful.	1) Validated desired metrics that may indicate success to rapidly identify a) early career obstacles, b) impactful resources, and c) opportunities for intervention. 2) Brainstormed to identify sustainable university-wide best practices to cultivate a culture of support and retention.
Advance Grant Kaizen #3 Post Tenure	Provost	1.1.2 1.2.3 1.3.1 3.1.4	An explicitly delineated map of successful progression beyond tenure was needed, with an emphasis on continued career development and expectations for professional and university contributions.	1) Developed a post-tenure faculty career map. 2) Identified sustainable university-wide best practices to cultivate a culture of support and retention. 3) Validated current group metrics to rapidly identify a) mid-career obstacles, b) impactful resources, and c) opportunities for development.
Advance Grant Kaizen #4 Recruitment & Selection	Provost	1.1.2 1.2.3 1.3.1 3.1.4	An explicitly delineated map of recruitment and selection of new faculty at the university was needed.	1) Identified 6 obstacles in the process as well as sustainable university-wide best practices to attract and retain new faculty. 2) Refined current metrics to identify recruitment success at various stages, including the percent of women at each point in the faculty career phases compared to baseline year. 3) Constructed current and future recruitment and selection map.
Confused Customers	Facilities Management	2.2.6	Parking regulation information for Winter Carnival was not reaching the intended recipients, causing confusion over where to park (and possibly unnecessary tickets, which cost time and money).	1) Formulated new communication strategy. 2) Partnered with Blue Key student organization to place parking notifications on their website.
ASME Student Design Competition	Student Activities	1.3.1 1.3.3 2.1.1	The student organization ASME (American Society of Mechanical Engineers) had issues with meeting the deadline for a design conference. For the past three years, ASME had not received any value from over $3,000 of design conference funding because of failed designs.	1) Mapped current state of design team process. 2) Performed root cause analysis on current state to uncover underlying issues revolving around failing to meet design objectives. 3) Optimized ability of team to appropriately attend the conference and represent Michigan Tech as well as leave behind a strong knowledge base for future years.
Interlibrary Loans	JR Van Pelt and Opie Library	1.3.1 1.3.2 1.3.3	Michigan Tech's reputation was being negatively affected by students, faculty, and staff not returning Michigan eLibrary (MEL) items in a timely manner.	1) Defined the process and identified 11 projects assigned to group members and 7 items to follow up on that branch from this problem.

				2) Tracked 9 overdue items in MEL and discovered the past report used for collecting data had 6 errors.
Advance Grant Kaizen #5 Metrics	Provost	1.1.2 1.2.3 1.3.1 3.1.4	A plan was needed to overlay identified metrics used for decisions at each point of the faculty career phases onto databases where they may be collected.	1) Strategized centralizing and maintaining these data collection and calculation processes. 2) Applied data mapping to each phase of faculty career development. 3) Identified raw data that exists; what calculations are needed, being done, and possible; what needed data is not being collected, and who was responsible for follow up.
Faculty Pay Period Model Improvements	Human Resources	1.1.2 1.3.1	Some faculty and other 9 month employees are paid bi-weekly over 38 weeks (19 pay periods). This system was causing uncertainty about the effect on summer teaching pay. This led to an interest in exploring options for changing the number of pay periods.	1) Performed process mapping of what the future state might be by reducing the number of pay periods from 19 to 18, leading to pay periods aligning with the academic semester. 2) Recommended options to the Executive Team.
Computer Build and Deployment Process	Information Technology	1.3.2 2.1.3	IT Operations is tasked with handling the deployment of printers when they are ordered by departments or by IT. When printers are deployed they are sometimes set up by the printer vendor and not IT staff. Sometimes printers were not being completely configured which generated support tickets and required additional troubleshooting efforts.	1) Applied error proofing methods to reduce troubleshooting efforts after printer delivery, reducing number of follow up tickets per year from 68 to 22 2) Documented the process and created a checklist for correct printer deployment.
Blueprint for Residential Dining	Dining Services	1.3.1 1.3.3	There was a need to evaluate last year's vision for dining services and update it for the upcoming year, to sustain the continuous improvement of the student dining experience.	1) Created a plan for the upcoming year in Residential Dining as a part of a 5 year initiative to revisit, revise and reprioritize goals. 2) Developed personal performance goals for each member of the management staff which aligned with the 1 and 5 year plan.
First Year Programs	Engineering Fundamentals	1.2.1 2.1.3 2.2.1	Engineering Fundamentals wanted a shared vision of the need for change in the First Year Program.	1) Shared individual vision and values. 2) Identified common goals. 3) Explained the planning process moving forward.
Visual Management Workshop	Library	1.3.3	The Library desired a way for staff to see the status of Library sponsored events, such as a book talk or the Archives Speaker Series.	1) Determined which steps were important and who was responsible for those steps. 2) Visually shared actionable information with relevant staff members. 3) Removed wasted time and effort.

Visual Management Workshop	Research	1.3.3	The office was looking for a way for everyone to see the status of subcontracting closeouts, including running the report, checking on the files for possible extensions, emailing the subcontractors the reports needed, waiting for the reports, and following up on the reports.	1) Determined which steps were important and who was responsible for those steps. 2) Visually shared actionable information with relevant staff members. 3) Removed wasted time and effort.
Visual Management Workshop	Business	1.3.3	A means to see the status for the process of managing relationships with clients and service providers was sought.	1) Organized the key tasks of the process with visible markers of transition points and durations. 2) Created a method to highlight activities that are outside the acceptable performance range in order to make corrections in real time.
Dining Services Training Program	Dining Services	1.3.1 2.2.1 2.2.2	New dining employees were confused due to unorganized onboarding training. Lack of centralized information concerning their responsibilities once on the job resulted in new employees receiving conflicting information from different staff members.	1) Created a 3-year plan to create and implement training. 2) Developed visual management to prioritize and manage the plan, resulting in an estimated time savings of 55 person-hours per year. 3) Created process for employees to recommend changes or additions to the plan.

<u>Strategic Goal Alignment:</u> Michigan Tech has a strategic plan which helps align the daily activities of the various departments. Continuous improvement using Lean principles aids in this effort.
 	
`[green box]` Indicates a strategic plan subgoal supported by OCI.
 	
[University Strategic Goals Website](#)
	University Strategic Goals:
	<u>Goal 1: An exceptional and diverse community of students, faculty, and staff.</u>
	    1.1: Exceptional academic and professional community.
	      1.1.1: Recruit, support, recognize, and graduate bright, motivated, and adventurous students.
	      1.1.2: Attract, retain, and support faculty and staff by providing recognition, rewards, and competitive compensation.
	      1.1.3: Provide professional development and leadership opportunities for students, faculty, and staff.
	    1.2: Diverse, inclusive, and collegial environment.
	      1.2.1: Promote inclusiveness and collegiality through openness, engagement, mutual respect, and understanding of diverse perspectives.
	      1.2.2: Provide a rich cultural environment and a welcoming campus.
	      1.2.3: Develop and implement initiatives to increase the diversity of students, faculty, and staff.
	      1.2.4: Pursue opportunities for dual-career faculty and staff.
	      1.2.5: Enhance work-life blending for all members of our community.
	    1.3: Exceptional services and infrastructure.
	      1.3.1: Promote a university-wide culture of safety, responsiveness, effectiveness, and efficiency.
	      1.3.2: Provide exceptional technology, library, and laboratory facilities that support education, research and innovation.
	      1.3.3: Create an aesthetic, sustainable, and effective infrastructure.
	<u>Goal 2: A distinctive and rigorous action-based learning experience grounded in science, engineering, technology, sustainability, business, and an understanding of the social and cultural contexts of our contemporary world.</u>
	    2.1: Integration of instruction, research, and innovation to achieve the University Student Learning Goals.
	      2.1.1: Provide research, service-learning, project-based, entrepreneurial, and international opportunities for students.
	      2.1.2: Promote mutual appreciation and collaborative opportunities across academic disciplines.
	      2.1.3: Continually review and update existing programs and develop new offerings in emerging disciplinary and interdisciplinary areas.
	    2.2: Transformative educational experience grounded in a residential-based technologically-rich learning environment.
	      2.2.1: Encourage and support high quality, innovative, and effective instruction and experiences to enhance student learning.
	      2.2.2: Contribute to students' development and application of critical thinking skills, creativity, leadership, collaborative skills, and ethical reasoning.
	      2.2.3: Enhance student learning through activities that promote long-term physical and mental health.
	      2.2.4: Foster healthy relationships and the ability to productively manage conflicts.
	      2.2.5: Enhance students' communication skills as well as information, technology, and global literacies.

	2.2.6: Encourage social responsibility and the understanding of public policy issues.
	2.3: Education that responds to the needs and challenges of the 21st century.
	    2.3.1: Expand Ph.D. and master's enrollments, degrees awarded, and scholarly productivity.
	    2.3.2: Improve access via non-traditional delivery of graduate programs.
	    2.3.3: Promote lifelong learning by providing opportunities for continuing education using appropriate delivery models.
	Goal 3: Research, scholarship, entrepreneurship, innovation, and creative work that promotes a sustainable, just, and prosperous world.
	    3.1: Growth in research, scholarship, and creativity.
	    3.1.1: Increase external support for research, scholarly, and creative activities.
	    3.1.2: Recognize and reward our accomplishments and promote them both internally and externally.
	    3.1.3: Encourage and support interdisciplinary activities.
	    3.1.4: Cultivate a community of research inspiration, productivity, and excellence.
	    3.1.5: Increase development and optimize maintenance of shared research facilities, library resources, equipment, and
	        infrastructure.
	    3.1.6: Facilitate coordination of research activities to address problems of social significance.
	    3.1.7: Improve efficient management and administration of externally funded activities.
	    3.2: Economic and social development and innovation.
	    3.2.1: Create a culture of responsible innovation and entrepreneurship and expand entrepreneurship in undergraduate and
	        graduate programs.
	    3.2.2: Support workforce development and social engagement through collaborative outreach and technology transfer.
	    3.2.3: Encourage and support technology commercialization and start-up businesses.
	    3.2.4: Expand international and cross-cultural engagement with universities, industries, non-governmental organizations, and
	        governments.