

Becoming a Lean University™

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Abstract

Under the direction of the Executive Vice President of Administration, the University of Central Oklahoma has embraced the concept of Lean Thinking as it faced significant financial issues. In Fiscal Year 2002 the University experienced a 15% budget reduction. A significant revenue increase from state appropriations is not expected in the foreseeable future. In fact the UCO students pay 50% of the cost of their education.

Outdated and patched administrative processes were contributing to employee job dissatisfaction and low productivity levels. Because of recent budget cuts and insufficient funding to cover mandatory cost increases, the University needed to find ways to dramatically improve productivity and improve deteriorating employee morale.

The primary focus of Lean is the identifying and eliminating waste from the product or service provided. Lean Thinking methodology was introduced in the Administration area through a comprehensive employee training program designed to foster program acceptance, create more efficient job processes, and generate greater job satisfaction through job improvements.

Although Lean Thinking projects were initially focusing on Administration processes other divisions on campus have found value in the approach. Lean Thinking is very well received because of its relatively quick rate of implementation.

Introduction:

The University of Central Oklahoma is a regional institution with a current enrollment of 15,000+ students. Centrally located in Edmond, Oklahoma, a suburb of Oklahoma City, the University is in the top 7 % of university enrollment across the nation. The student population drawing from 76 (out of 77) Oklahoma counties, 47 states and 76 countries provides the University with a rich cultural diversity.

The University of Central Oklahoma is Oklahoma's oldest institute of higher learning, established 17 years before statehood in 1890. The Oklahoma State Regents for Higher Education was formed by state leaders in 1941 and has governed the University since then.

The University currently has five academic colleges offering both undergraduate and graduate programs. UCO is dedicated to educating responsible, productive and engaged Oklahomans in a dynamic environment where building leaders and welcoming the challenge of change is endorsed. Three core principles are embraced by the University: Civility, Community and Character.

Problem

The University needed to find ways to dramatically improve both productivity and improve deteriorating employee morale. Limited fiscal resources with increases in mandatory personnel costs and growth in student enrollment have made it challenging to maintain existing programs, much less expand services.

Traditionally public university funding has been insufficient. Having experienced budget reductions of 15% in 2002 and no significant increases since then, the University of Central Oklahoma students now contribute 50% of the total University Budget. The budget situation is not expected to improve; therefore ways to more efficiently use the University funds is critical for program maintenance and expansion of programs to meet our customer needs.

In addition to limited funding, ineffective administrative processes were contributing to employee job dissatisfaction and low productivity levels. Mountains of red tape buried employees in non-value added administrative processes and created an environment that did not focus on customer service. With our limited staff, the energy to initiate and implement process improvements had been bypassed and instead, processes were patched with band-aids over and over again, which created a downward spiral reducing customer satisfaction and employee morale.

The Executive Vice President conducted focus groups with campus constituents to develop a list of priorities for process improvement. The outcome was a need to overhaul a

multitude of administrative processes that over time had strangled the university's ability to function efficiently.

Design

A small team of management staff working directly with Steve Kreidler, Executive Vice-President of Administration, canvassed the campus listening to individuals and groups discuss their "pain" with the administrative processes at the University of Central Oklahoma. Annual session has followed the initial focus groups, but with smaller groups representing the campus areas to check on the process of improvement.

As the team analyzed the results of the initial survey, it was apparent to Executive Vice President Kreidler that the majority of the issues presented were complaints centered around non-value-added activities. Kreidler also noticed that many of these problems were nearly identical to those he had seen and heard in the private sector before his employment at UCO. A plan for process improvement was formulated based upon a relatively new continuous improvement initiative, the Lean approach. To validate his thoughts on using a technique that had traditionally been used only in the manufacturing world, Kreidler obtained consultation from the Oklahoma Alliance for Manufacturing Excellence, Argent Global Services, and Francis Tuttle Technology Center. Seeking best practices in other sectors often opens the door for tremendous opportunities. While Mark Nash of Argent Global Services and others had used Lean in non-manufacturing venues since 1988, it had never been applied extensively in higher education. Without an established training program readily available, the university in a collaborative effort with

Argent and Francis Tuttle Technology Center utilized the Lean approach to design and develop the initiative on campus which is now known as Lean University™.

Training was provided to all administrative staff to create both a common understanding and an atmosphere of cooperation for the Lean effort. Each administrative staff member attended a one-day introductory Lean class. The university spent less than \$40,000 on the initial training of the administrative services staff.

The model used to implement the Lean University™ has been proven effective in other types of organizations. The 4-step model is described below:

Step 1: Identify the Opportunities - *Complete an organization-wide diagnostic search for issues, problems and opportunities.*

Step 2: Solution Design - *Create a blueprint for success that involves all employees: training, mapping, and planning.*

Step 3: Implementation – *Use kaizen events, core teams, and metrics to implement and illustrate change.*

Step 4: Continuous Improvement – *Monitor performance after projects are completed.*

The University outsourced the facilitator role to Argent for the first few processes. An office of Process Improvement with a manager overseeing the Lean processes has been added, which provides closer oversight of past Lean processes and the scheduling of future Lean initiatives.

Implementation

Utilizing the four-step Lean model, the University of Central Oklahoma began implementation of the Lean initiative by holding an informational meeting attended by all administrative support staff. This meeting was used to provide a brief overview of Lean, to convey the reasons for implementing Lean, to stress that all administrative support staff would be involved, and to explain the steps required achieving this cultural change. Argent and Francis Tuttle Technology Center partnered to provide the training at the University.

Step One of the Lean model was already in process. The campus-wide survey results were constantly being analyzed and reviewed for where the “pain” was greatest. Steve Kreidler, Executive Vice-President of Administration, and his immediate staff began prioritizing issues and opportunities looking for possible pilot projects and other areas where immediate attention was necessary to improve customer service. Processes in every department were identified for the Lean approach. A priority list was developed. The work order process used by the Facilities Management department was selected as the first process to be analyzed with the Lean approach for two reasons: 1) number of complains regarding delays in work order completion and 2) impact of improvement on the whole campus, encompassing all divisions. The Facilities Management staff welcomed the opportunity to participate in this first workshop and improve their service.

Step Two was launched within two weeks of the development of the priority list. One-day classes were offered to train all administrative support staff from the lowest paid employees to the Executive Vice-President of Administration with the *Quality-Driven*

*Lean Enterprise*TM class, offered by Argent. This Lean class focused on the way Lean is used in administrative, service and support type processes, and how Lean ties into quality initiatives that may be implemented in parallel or are already in place. Each class contained lecture and simulation to not only explain the concepts of Lean, but also demonstrate the power in a hands-on fashion. A simulation exercise with class participants playing a role of an empty and critical position demonstrated the Lean tools and techniques using the hiring process.

These classes were followed with a Value Stream Mapping (VSM) workshop. This two-day workshop on-campus used a value stream of the university as the basis for learning. During the two days, a current state map and a future state map were created by the workshop participants. Approximately 50% of the time was spent in the classroom learning VSM techniques and the remainder of the time was spent actually walking the process, mapping it and discussing opportunities with the employees working the process on a daily basis. At the conclusion of the workshop, participants had acquired basic VSM skills to build on, and had a current state and future state map that were approximately 60-70% accurate. This level of accuracy is very close to being good enough to start making improvements.

Step Three began at the conclusion of this workshop. VSM maps visually illustrate the process for employees, first in the current state (as it is now) and then in the future state maps (defining priority changes). A Lean implementation project, also known as a kaizen event, is used to address VSM maps future state.

Departments independently implemented changes in their process based on the maps prepared in the workshop. Some examples of major changes made to improve processes include:

- Employment Services – online hiring system
- Purchasing – online requisition process
- Budget Office – electronic monthly reports

As previously stated, the work order process for Facilities Management was the first facilitator-lead project targeted to be improved through the Lean approach. The flow of the process improvement with the work order process is described below:

The 5-day kaizen event dedicated the efforts of five employees for the entire week. Two other employees were assigned on an as-needed basis. This core team under the direction of a facilitator from Argent and UCO's designated Lean Management Coordinator reviewed the two maps created during the VSM workshops and made minor corrections and updates to get a map defined that the core team believed was approximately 90% accurate.

From this, an action plan consisting of prioritized tasks was developed and a set of Lean metrics (measurements illustrating efficiency) was agreed upon by the core team. A small group of team members collected data for the current state (before) metrics. These metrics were posted to a display board in the core team meeting room.

The Action Plan included assignments for team members with specific instructions on who to talk to, what order to complete tasks, and how to explain the efforts to the staff. Small group meetings were held with all employees in Facilities Management to explain the project and to solicit additional issues, opportunities and possible solutions. As the changes were implemented, the team members explained them to employees within the process and observed how the changes worked. Minor adjustments were made on the spot using the combined knowledge of the employees and team members to get a workable solution that created positive change.

At week’s end, data was collected for the “after” section of the metrics display board. The results were then presented to the management and staff of Facilities Management as well as to the Executive Vice-President of Administration. Tasks that had not been completed yet were assigned to individuals from the core team with deadlines attached. A summary report showing the work that took place during the week was created to use as a guideline for future efforts.

The Facilities Management project scoreboard at week’s end is shown below:

Metric	Before	After	% Improvement
# pieces of paper generated	19	2.2 ⁽¹⁾	88.4%
Annual paper cost ⁽²⁾	\$15,597.46	\$1,262.39	91.9%
Travel path of the W/O ⁽³⁾	1265 ft.	253 ft.	80.0%
Average # of touches ⁽⁴⁾	28	5	82.1%
Average age of W/O waiting at assignment ⁽⁵⁾	24.1 days	TBD	TBD
% of W/O submitted by email (TMAil)	26.8%	TBD	TBD

Notes:

- (1) 1 piece for each Work Order + (2 pieces for orders on 60%) or $1+2 \times .6 = 2.2$
- (2) Based upon 13,516 W/O annually at a before cost of \$1.154 per W/O and an after cost of \$0.0934 per W/O
- (3) Administrative path of the paper; does not include service path when in the field
- (4) From point of printing to close and filing
- (5) Visual inspection of request dates on new W/O's in technicians boxes but showing no progress for "Before" state, as compared to visual inspection of request dates on new W/O's on scheduling boards awaiting work for "After" state

Significant improvement was accomplished in five days. And while not everything could be measured at week's end, a 30-day report further emphasizing the concept of continuous improvement was able to capture all data being tracked. Less than six months later, repetitive effort focused on the customers' biggest complaints about this process, the scorecard was updated as follows:

Metric	Before	After	% Improvement
# pcs of paper generated	19	2.2(1)	88.4%
Annual paper cost	\$15,597.46	\$1,262.39	91.9%
Travel path of W/O	1265 ft.	253 ft.	80.0%
Average # of touches	28	5	82.1%
Average age of W/O waiting at assignment	24.1 days	2.6 days	89.2%
% of W/O submitted by email	26.8%	91.1%	240.0%

While *Step Two* and *Step Three* of the Lean model are continuing to grow and expand, *Step Four* is also up and running. As quickly as an initial project is completed, the results are reviewed and efforts are being made to instill the concepts of continuous improvement into the affected process. Facilities Management is one of the best example of this on campus. The management team in Facilities Management continues to look for ways to improve the work order process today and eliminate waste. For 100% of all work orders the customer is contacted within two days of submittal. Over 90% of the

work orders are completed within three days and over 80% are completed on the day of request. A process that once had over 3,000 backlogged work orders now has less than 300 at any given time.

Lean has been implemented within departments without the formal Core Team structure and facilitator outside of the department. Other processes addressed with formal Lean

Core Teams include:

- Physical Plant Work Order Process
- Bursar & Financial Aid Coordination Process
- Graduate Program and International Students Office Student Application Process
- Purchase Order Process
- Physical Plant Payroll Process
- Architecture and Engineering Services Construction Contraction Process
- Access Control Key Distribution Process
- Academic Affairs Adjunct Hiring Process
- Academic Affairs Budget Request for Increase Process
- Prospective Students Services and Admissions Coordination Process
- Bursar Check Distribution Process
- Change Order Process
- Access Control Key Approval Process
- Access Control Housing Key Distribution Process

Benefits

Implementation of Lean University™ has resulted in numerous benefits and reduced waste. The overall impact is the cultural concept that positive change can and does happen at the University of Central Oklahoma. Employees have realized that they have been empowered to make improvements that help the financial position of the university, make their sense of satisfaction higher, reduce their frustration, and increase their productivity.

The following summary demonstrates many of the benefits experienced to date:

Training

- By providing the basic one-day introductory Lean course, all employees of Administrative Services have begun to realize that they are a part of the big picture, that they do have input into the processes they work within, and that good things can and do occur as a result of continuous improvement.
- Creating a common understanding and explaining to groups consisting of both management and staff positions that everyone is expected to participate, has opened the door for positive input and constructive criticism without fear of retribution. Many employees are not even waiting for events and workshops to occur. They are proactively making small immediate changes with excellent results.

Cost Savings

- Even though the emphasis of this effort is on improving customer service across campus, there have been multiple instances of cost savings through project work. The first Facilities Management project was able to save more than \$14,000.00 in annual paper cost with only one week's worth of work.

Efficiencies

- In addition to the obvious efficiencies that have been created in Facilities Management, several other areas have experienced improved efficiency. In the Purchasing Department the flow of processing purchase orders was changed from a batch and queue methodology to synchronous flow. By working each purchase order as far into the process as possible and completing the work and printing in a non-stop manner, one process agent has been able to reduce the average time to complete a work order by over 70%.

Personnel Performance Improvements

- The overall morale and work ethic of employees in areas where changes have been made has improved significantly. By empowering employees to make positive process changes, actually have accountability and be responsible for their work, Lean thinking has brought out the best in many employees. It has also on occasion motivated some employees who have stagnated or are entrenched in their ways to move on. Removing these human roadblocks in many departments has only made it easier for the rest of the employees in these departments to embrace the culture of continuous improvement.

Student Satisfaction

- Students have already begun to see the positive impact on services offered. The Facilities Management work order process improvements gained immediate support from students living on campus in student housing. Work

order requests are considered to be part of the solution instead of a useless and prolonged step in the process.

Faculty Satisfaction

- While the efforts of this initiative have primarily focused on Administrative processes, the Lean core teams have addressed processes in Academic Affairs and Enrollment Management divisions. Faculty members are benefiting from the improved processes. Faculty feedback has provided insight into the wants and needs of faculty, and how they interact with Administrative staff. Faculty members whose responsibilities include the role of building monitor have once again become engaged in the process. These building monitors funnel work order requests to Facilities Management and monitor progress on the work. Under the old process, faculty members attempted to avoid this role. With the improved process, faculty members have become supportive team members.

Retrospective:

Every successful venture has its weaknesses and shortcomings; the University's Lean program is no exception. Although Lean was and continues to be a very successful and valued program, opportunities for improvement exist. Some of the more notable areas identified are as follows:

- Lean programs were not originally sold as a complement to other continuous improvement programs efforts on campus. As the Lean program was introduced into the larger University community some viewed the program as a competitor or challenger to these other programs.

- The Lean concept encourages and endorses continuous improvement with/without formalized events. After the initial department wide training, some Administration employees/management personnel were confused about whether to implement process improvement changes in the absence of a formalized process.