

Becoming a Lean University™

Mark Moore
Director Process Services
University of Central Oklahoma

Mark Nash
Managing Director
Argent Global Services

Becoming a Lean University™

Abstract

Under the direction of the VP of Administration, the University of Central Oklahoma has embraced the concept of Lean Thinking as it faced significant financial issues. During the last three years, the University has experienced funding challenges including a 15% budget reduction in FY 2002. All indications suggest that there is not expected to be any significant revenue increase from state appropriations in the foreseeable future.

Old and tired 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. Lean Thinking methodology was introduced in the Administration area through a comprehensive employee training program with the intent of fostering program acceptance, creating more efficient job processes, and generating greater job satisfaction through job improvements.

Lean Thinking projects during the last year have migrated into other University areas as part of the University's overall continuous improvement program. 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. With a strong international presence represented by 104 countries, the University is rich in cultural diversity.

The University of Central Oklahoma is Oklahoma's oldest institute of higher learning, established in 1890, 17 years before statehood. The original University was called the Territorial Normal School in Edmond and was primarily a teachers' college. The Oklahoma State Regents for Higher Education was established by state leaders in 1941 and has governed the University since then. Throughout the University's existence, six name changes have occurred, all with the word "Central" as the theme.

The University currently has five colleges and educates students from all 77 Oklahoma counties and from 46 states.

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

Public university funding has traditionally been just adequately funded. During the last three years, the University of Central Oklahoma, like other public institutions, has experienced funding challenges, including a 15% budget reduction in FY 2002. All indications suggest that there is not expected to be any significant revenue increases from state appropriations in the foreseeable future. In addition to insufficient funding, old and tired 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 both productivity and improve deteriorating employee morale.

Mountains of red tape buried employees in non-value added administrative processes and created an environment that did not focus on customer service. Because of frequent changes in leadership, there was little resolve to initiate and implement process improvements; instead, processes were patched with band-aids over and over again, creating a downward spiral of increasing customer dissatisfaction and employee morale.

In reality, the only practical solution was to overhaul the multitude of administrative processes that over time had strangled the university's ability to function efficiently. This was made evident by the focus groups conducted by the new VP of Administration in 2002. Focus group participants clearly enunciated the need to fix administrative processes in order to improve speed and accuracy, bolster employee morale, and improve customer service.

Design

A small team of management staff working directly with Steve Kreidler, 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.

As the team analyzed the results of their survey, it was apparent to VP Kreidler that the majority of the issues presented were complaints centered around non-value-added activities. VP 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 called Lean Enterprise, or simply Lean, subsequently called Lean Univeristy™.

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 Vo-tech. 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 other venues since 1988, it had never been used extensively in higher education. With no established training program readily available, the university in a collaborative effort with Argent and Francis Tuttle Vo-tech utilized the Lean approach to design and develop the initiative on campus which is now known as Lean University™.

Then the management team set to work to design an initiative using a proven 4-step Lean Enterprise model as its basis:

Step 1: Identify the Opportunities

Complete an organization-wide diagnostic searching for issues, problems and opportunities. The size and/or complexity are not important. What is important is getting all employees and even some customers involved in this process. UCO had already completed an initial phase of Step 1 through a survey that had been conducted.

Step 2: Solution Design

Create a blueprint for success that involves all employees: training, mapping, and planning. The greatest asset utilized in Lean is employees. Create a common understanding through *training*. Introductory classes limited in size work best. Blending the classroom time with simulations to demonstrate the power of Lean creates buy-in and makes the experience more enjoyable.

Value Stream *Mapping* provides a very visual process map to explain processes to employees. Select initial processes to map based upon a set prioritization criteria established by the organization's Lean Champions. A current state map is used to show what a process, or value stream, looks like today. A future state map then shows what the mapping team envisions for the improved process.

From this mapping exercise, the team will then create an action *plan* to guide implementation. This plan prioritizes tasks, assigns responsibility and sets deadlines for the work to be completed. Project size is scoped at this time as well. Lean methodology recommends using the kaizen approach. This concept as adopted in the United States sets the longest timeframe for the main project work at no more than two weeks, and most often is one week (five days).

Step 3: Implementation

Project implementation using kaizen is structured to start slow with pilot projects designed to be successful and gain support for the Lean initiative. Once successes are apparent to the entire organization, it is then possible to roll out project work in a phased effort using multiple facilitators.

Core teams are created from employees working within the project's value stream. Employees from other parts of the university are included to provide an outside view of the process, as are internal customers. A typical core team consists of from three to seven core team members, including a facilitator.

The most effective way to create project success is to use experienced facilitators to mentor a group capable of taking over facilitation duties as skills are demonstrated.

Additionally, facilitators direct employees and team members not to wait for projects or reviews before beginning to make improvements during the implementation step. Low hanging fruit that can be easily addressed should not wait. All employees should be encouraged to participate in Lean through this concept.

Team meetings for all employees in a project area are held by the core team at the start of the week to get additional input from all employees. As changes are made, additional meetings are held to demonstrate and discuss changes. Quite often these meetings provide better solutions than what the core team started with.

Metrics are posted to a scorecard at the beginning of the project period to demonstrate the current state and after, or future state, metrics are posted at the end of the project period along with the change numbers and percentages. Metrics selected vary from project to project, but should always have meaning to all employees in the area. Travel distance, process lead time, number of employees required, labor time, queue time, hand-offs, and errors are just a few of the possible metrics that may be used.

Step 4: Continuous Improvement

The final step of the Lean initiative may be the most critical. Once the journey begins, it can never end. Champions and team members continue to monitor performance after projects are completed. Periodically, the core team must reconvene to look for other improvement possibilities. When additional improvement is possible, the team schedules a new project and the 4-step journey starts a new cycle. Even when no new issues arise, a periodic review must be done to see how the value stream aligns itself with the strategic plan of the organization. As the environment changes over time, the value stream must be adjusted to maintain this alignment.

The university spent less than \$40,000 on the initial training of the administrative services staff. This training provided to all administrative staff created both a common understanding and an atmosphere of cooperation for the Lean effort. Each administrative staff member attended a one-day introductory Lean class during this training. The curriculum for these sessions was a result of the joint effort of Argent, Francis Tuttle Vo-tech, and UCO's management team.

As the university looked at implementation projects, it was determined that starting slow in the pilot project phase and outsourcing the facilitation to Argent was a prudent approach. Implementation projects have returned far more in annual savings than the \$5,500 in project fees for facilitation services. By strategically scheduling events, no additional budget dollars have been required to make project implementation a reality. Additionally, during early phases of implementation, the only other costs to the university have been employee labor dollars for those on core teams, and the occasional minor expenditure (less than \$500 per project).

The University decided that placing an individual into the role of Lean Manager/Coordinator would be critical to maintaining the momentum of the initiative. During the early implementation stages, a UCO employee worked with Argent as a facilitator. This position has worked well and is now permanent. The purpose of this position will be to train additional facilitators in addition to managing the overall effort.

Implementation

Utilizing the four-step Lean Enterprise 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.

Step One of the Lean model was already in process. The campus-wide survey results were constantly be analyzed and reviewed for where the “pain” was greatest. Steve Kreidler, 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. The work order process used by the Facilities Management department was selected due to the “pain” that was being experienced campus-wide as a result of the existing tremendous backlog. Another major factor in selecting this process was the willingness of the Facilities Management staff to participate in this first workshop.

Within two weeks of this meeting, *Step Two* was launched and one-day classes began. One class was held each week until all administrative support staff from the lowest paid employees to the Vice-President of Administration had attended the introductory training. While this initial training took several months to complete, the interest that was generated by the conversations following each class provided the motivation to get many skeptics into a class.

The *Quality-Driven Lean Enterprise*TM class offered by Argent was used as the basis for this introductory training. 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. By integrating a simulation exercise requiring class participants to fill an empty and critical position, Lean tools and techniques were demonstrated using the hiring process; something all employees are familiar with from at least one side of the 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 Value Stream Mapping 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. Participants were asked to go back to their jobs and clean up the accuracy of the data and the process flow.

Step Three began at the conclusion of this workshop. A Lean implementation project, also known as a kaizen event, was scheduled addressing the maps created in the VSM workshop.

As previously stated, the first project targeted the work order process for Facilities Management. This 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 set 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 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.

Assignments were given to 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. After these meetings, tasks were adjusted slightly and team members began implementing change.

As each change was made, 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 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%

After this initial week of project work was completed, other areas on campus were targeted. These included Purchasing, Financial Aid and the Bursar's Office, and International Graduate Student Application process. A variety of Lean approaches have been demonstrated using these areas of focus, including: the traditional 5-day kaizen event, focused kaizen (3-day events) and point kaizen (1-day or less). A mixture of different kaizen approaches has been used to reinforce the fact that Lean is not a cookie-cutter concept. Each and every lean project starts at square one, and the correct tools from the Lean tool box are then applied based upon the situation. Additionally, Value Stream Mapping events have been used to create highly effective maps in areas where Lean education and buy-in is not necessary, but is critical to the success of the program. Participants in these areas receive extensive three to five day mapping events focusing on staff buy-in and the creation of a solid Action Plan.

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 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. 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.

Benefits

Implementation of Lean University™ has resulted in numerous benefits. The overall impact is the cultural concept that positive change can and does happen at the University of Central Oklahoma. Employees are beginning to realize 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.

As the Lean methodology continues to be used across campus, there will be areas that are just starting on the Lean journey, and other areas that will pass through the Four Step Lean Enterprise model four, five or six times in rapid succession.

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 on 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. The savings was not removed from the Facilities Management budget, but was redirected to cover a funding need elsewhere in the department. Since that time enough labor hours have been saved in the creation, tracking and control of work orders to move one employee to a new more challenging position within the department.

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 purchasing 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, internal customers are often faculty members. As process improvement continues to gain traction in these processes, faculty members are beginning to participate as a customer on Lean core teams. The input received from these faculty members provides 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 in as a complement to other continuous improvement programs. 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 University underestimated the need for a fulltime Lean Coordinator. One or two Lean programs were delayed due to scheduling conflicts and other unforeseen events. A full-time University-based facilitator has the opportunity to manage scheduling conflicts more effectively and creatively. Lean is intended to be a fast-paced assessment and implementation program. Too many interruptions in the Lean process change the perception of the program and team members lose their enthusiasm for change.
- 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.