Lean higher education: successes, challenges, and realizing potential

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Abstract

Purpose – The purpose of this paper is to provide evidence from the experiences and the literature on organizational change and transformation to implement and sustain Lean higher education (LHE) initiatives designed to benefit the university, its employees, and the individuals it serves.

Design/methodology/approach – The authors present organizational development literature and examples of success and challenges to better support the effective application of LHE.

Findings – The authors address the importance of and techniques for first, assessing and improving institutional readiness; second, enhancing leadership awareness, understanding, and support for LHE; third, strategic planning, Lean leadership, and getting help for LHE; and fourth, facilitating an institution-wide transition to LHE.

Originality/value – A structured, step-by-step approach offers practical guidance for implementing institution-wide Lean initiatives in HE.

Keywords Leadership, Lean higher education

Paper type General review

The case for Lean higher education (LHE)

External pressures for change are forcing higher education to consider new modes of operation. Public opinion generally regards institutions of higher education as inefficient, expensive, and labor intensive. Economic challenges have reduced public funding to higher education. Declines in the number of traditional aged college bound students and a more crowded marketplace (including the growth in online and for-profit) has increased competitiveness for students. In response, the application of Lean principles and practices to improve the efficiency and effectiveness of college and university processes (Womack and Jones, 2003), or LHE (Balzer, 2010), offers the potential for realizing dramatic improvements in the way higher education and its supporting services are delivered:

(1) creating "walk-in" service at a student counseling center without adding any new staff, eliminating the need for students to wait an average of 21 days to meet with a counselor;

(2) reducing the time required to change the funding source for graduate students (and issue paychecks) from 20+ days to 45 minutes;

(3) saving over $100,000 in the student billing process;

(4) reducing the time to reply to prospective students from two to three weeks to one hour; and

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(5) reducing backlogged repairs of campus facilities from 24 work days to under
three work days (with most addressed the same day).

LHE has been demonstrated to accomplish these and many more improvements using
five basic steps (Balzer, 2010; Byrne, 2013) in a brief period of time, i.e., usually a three-
five-day workshop led and staffed by university employees.

Step 1. Identify the beneficiaries of the process and what they value the most.
Using an example from our university designed to improve the process of hiring
administrative professionals, the hiring departments want to fill positions quickly
before the best candidates accept other positions; applicants want to be able to track
the hiring process and know whether they are still being considered. It took an average
of 22 weeks to extend an offer of hire – more than five months.

Step 2. Analyze the current process to eliminate wasted steps and effort and improve
the flow among remaining steps. The project team found that 64 of the 87-step process
added no value, and included many unnecessary signatures and handoffs, with lots of
wait time sitting in in-baskets between steps.

Step 3. Rebuild the new process using Lean tools and techniques to reduce waste,
improve flow, and meet – or exceed – what the beneficiary wants. A number of the
100+ Lean solutions identified were used to redesign the hiring process to include only
40 steps and completed in eight weeks –without requiring any additional resources.

Step 4. Implement and evaluate the new process using metrics that reflect what the
beneficiary expects from the process. Working with the office of human resources, the
project team redesigned workflow, design "best practice" toolkits for hiring
departments, and simplified forms to implement the new hiring process and evaluate
its early progress.

Step 5. Achieve perfection. Over time, additional Lean solutions might be identified
to further improve the process. Since the university employees who evaluated and
improved the process were the same employees who use the process, they have all the
skills and experience needed to make it even better for the hiring departments, job
applicants, and other beneficiaries.

Undergirding the five steps are two overarching Lean principles: respect for
employees and continuous improvement (Byrne, 2013; Emiliani, 2012; Liker, 2004).
Employees are recognized as the most valuable asset of the organization; building their
skills, using their knowledge, and treating them well is ultimately in the long-term best
interest of the university. Creating a culture that expects and challenges all employees
to continually improve university processes empowers them to find and fix bad
processes everywhere they see them.

Scores of universities have had great success in implementing LHE projects
throughout their campuses. Balzer (2010) and Behm *et al.* (2010) present numerous case
studies on the implementation of LHE in various universities in the USA and Western
Europe with impressive results in terms of benefits to the beneficiaries of the process,
the employees who participate in the process, and cost and time savings for the
institution. Doman (2011) further described the university-wide momentum that can be
achieved by using student teams to improve administrative processes. Selected
examples of these successes are presented in Table I.

There are no shortages of broken and inefficient processes in higher education:
recruiting and admitting students, answering billing and financial aid questions,
supporting external grant applications by faculty, approving new courses and degree
programs, etc. Yet despite such examples of success, the adoption of LHE has been

Institution	Process	Outcome
University Central Oklahoma	Facilities management work orders	Paper cost reduced by 92% Backlog reduced by 90%
University New Orleans	Changing a source of funding	Cycle time reduced by 98% Error rate reduced by 89%
University of St Andrews	Re-shelving of library materials	Return to shelf time reduced by 43% Times a book is handled reduced by 40%
University of Iowa	Hiring process	Total work time reduced by 46% Process steps reduced by 17%
University of Michigan	Accounts payable	New vendor account approval time reduced 50% Time to upload payment data reduced 50%
Bowling Green State University	Student health services	Pharmacy visit wait time reduced by 30% Walk-in appointment wait time reduced by 14%

limited generally to one or a few projects in limited areas rather than deep, structural changes in the "DNA" of the institution: commitment by the university's board of trustees; inclusion in the university's mission statement; a strategic priority in planning, budgeting, and evaluation; and more.

How do we implement LHE university-wide and change the institution's DNA? In the remainder of this paper we draw on our experiences and the body of work on organizational change and transformation to help implement and sustain LHE to achieve significant benefits for the university, its employees, and the individuals (both internal and external as well as current and future) it serves.

Starting down the path of LHE: assessing and improving institutional readiness

The success of any significant organizational change effort, including LHE, will hinge on whether the university is adequately prepared to implement system-wide change. Best practices in organizational change outside higher education as well as within higher education should be considered. Two factors related to institutional readiness are workplace climate and leadership practices.

Workplace climate

Climate refers to employees' shared perceptions and attitudes about their work environment, and a healthy climate arouses higher levels of motivation, commitment, and job performance. While there are many aspects of workplace climate (Stringer, 2002), three seem particularly relevant to an institution's readiness to introduce LHE: first, a climate of standards, where employees are committed to delivering excellent service to beneficiaries; second, a climate of support, where the professional development and growth of all employees are important; and third, a climate of commitment, where employees are proud of their work and want their institution to succeed. It may be useful to assess these aspects of workplace climate (formal employee surveys, key informant interviews, etc.) before proceeding; if they are found to be lacking, Stringer offers a number of potential interventions that can improve workplace climate and increase support for LHE.

Leadership practices
The words and actions of senior leaders, including their control over resource allocation, strategy, and organizational arrangements (e.g. job responsibilities, reward systems) will influence whether the workplace will support or thwart the implementation of any LHE initiative (Emiliani, 2012). Greater leadership practices will be needed, particularly when the process slated for LHE is critically important to the institution, impacts a large number of individuals inside and outside the university, and the climate is neutral or hostile to change (Barling, 2014). But the level of supportive leadership practices leaders can deliver will depend on a number of factors including their power and influence, personal commitment to LHE, and availability of their time due to competing interests (Stringer, 2002).

Overall, it would be wise to jointly consider workplace climate and leadership practices when assessing a university's readiness for LHE. Where deficiencies or shortcomings are noted, they should be acknowledged, assessed, and addressed; even the overwhelming evidence of LHE's dramatic improvements on the efficiency and effectiveness of core services in higher education will not be able to overcome a toxic workplace climate and tepid leadership support (Byrne, 2013; Womack and Jones, 2009). A strong workplace climate and strong leadership practices may signal a readiness for university-wide LHE initiatives; a less supportive climate and more limited leadership practices may limit the scope of the LHE initiative. Where the right workplace climate and leadership practices are highly variable or consistently unsupportive, it may be best to defer the implementation of LHE or abandon it altogether.

Leadership awareness, understanding, and support for LHE
Leadership awareness, understanding, and support for LHE can help senior leaders in higher education implement LHE initiatives and address sources of resistance. For example, leaders must be committed, and make that commitment public, to the core principle that LHE is about meeting the needs of those served by the institution and not viewed as solely an approach to cost saving (although cost savings is usually an outcome of LHE as waste is removed and flow is improved) (Harrington, 1987). By doing so, they will alleviate concerns that are likely to arise among faculty and staff about potential job losses, perceived loss of power among middle managers, and perceived loss of autonomy among employees who prefer to do things their own way (Harrington, 1987; Kenney, 2011).

The failure of leadership to embrace LHE is the most likely reason that it has not caught on within and across higher education (Byrne, 2013; Emiliani, 2012; Womack and Jones, 2005). Lean initiatives have proven successful within a wide spectrum of industries from manufacturing to healthcare, and Lean principles and practices have become central both to strategy and operations. To our knowledge, there are no comparable examples in higher education. Resistance persists regarding LHE; LHE is more typically a one-time fix of a specific process rather than a deep, systemic change to continuously improve processes for the beneficiaries of higher education while demonstrating a deep level of respect for all university employees. Or LHE begins with great support and activity, and then wanes when a changing situation or a changing leader makes it easier to walk away from early successes and embrace a new, favored approach to improve higher education. Arguably, this resistance and these failures can be traced back to a failure of effective leadership.

Improving leadership awareness, understanding, and support for LHE
Senior leadership must be engaged in communicating requirements and expectations, solidifying support, and leveraging momentum gained through LHE activities. Thus, senior leaders need to learn firsthand about effective implementations of Lean initiatives (Womack and Jones, 2005). One way to do this is through presentations by, or visits to, peer institutions who have successfully implemented Lean principles and practices. Alumni and local businesses who have successfully adopted Lean can be powerful teachers to help showcase effective Lean practices and implementation successes. Finally, carefully targeted webinars and articles may help raise awareness, but these may be too "academic" to actively engage a leader's interest.

To ensure long-term success, it is essential to communicate the requirements and expectations of becoming a Lean university. Lean requires a sustained commitment that must be reflected in strategic planning activities (Emiliani, 2012; Womack and Jones, 2005). One or more Lean champions must be identified that have sufficient power and authority to commit resources, ensure job security, enact changes in the roles of employees, and leaders, as well as providing continuity to implement and sustain Lean initiatives. The champions then shepherd the organization through its Lean transformation by maintaining a focus on value and addressing roadblocks.

One of the most powerful tools to increase awareness is to take the leader to the place where work is done and have a LHE expert demonstrate in Lean terms the extent to which waste and poor flow exist. These "Gemba walks" allow senior leaders to observe good employees trapped in a bad process (Laraia *et al.*, 1999; Womack and Shook, 2013). As employees express frustration or have to implement a "work-around," leaders witness the need for process improvement.

Using pilot demonstration projects to gain visibility and credibility
Pilot projects can provide a space in which Lean principles and practices can be explored prior to making a formal commitment. The target process chosen should be a critical and visible process that will have a broad impact on the institution (Womack and Shook, 2013). Success of these demonstrations provides evidence that LHE can work in this particular institution and provide a case in point to address expected resistance. The return on investment (ROI) realized from these demonstrations can be easily communicated by showing the current "hidden" costs of monitoring and preventing the outcomes of bad processes as well as addressing the consequences (Harrington, 1987). The ROI of Lean principles and practices can emphasize both short and long-term savings of time, dollars, space, and sources of waste that are eliminated; LHE offers a compelling financial argument in challenging financial times as well as the potential competitive advantage in an increasingly competitive higher education environment to convince even the most skeptical higher education leaders to give LHE a serious look.

Overall, engaging senior leaders in the pilot project is crucial to gain visibility and credibility. The evidence from an effective pilot project in which they were active participants as team members or the process owners, where reductions in the number of steps, waiting time, mistakes, and cost are typically reduced by 50 percent or more creates a positive momentum to embrace LHE and expand its application to other equally important (and broken) processes (Womack and Shook, 2013). It is essential for senior leaders to spend structured time with the Kaizen facilitator to gain a complete understanding of the process from a Lean point of view. By having seniors leader "out front" to communicate about the demonstration project, LHE gains the visibility and credibility it needs to be successful (Byrne, 2013).

Once senior leaders are committed, the institution's "champion" for LHE should leverage this moment to consolidate senior leadership support to implement LHE (Balzer, 2010; Emiliani, 2012). Senior leaders should be engaged to select and prioritize Lean projects. Current faculty and existing academic courses and programs that teach Lean principles and practices should be enlisted to assist in enlarging the number of LHE initiatives. Universities can also partner with local businesses and organizations that have a successful history of using Lean to take advantage of community expertise and gain useful insights. Finally, an advisory board that includes certified Lean practitioners (e.g. Lean Six Sigma Black Belt) can provide guidance and expertise. These individuals will do the important work of communicating the benefits of LHE, broadly and personally.

Creating and strengthening organizational structures to launch and support LHE
Leadership commitment and external community support may not be enough to create a truly Lean college or university. Why? Institutions resist change (Burke, 2014; Katz and Kahn, 1978), and college and university systems are no exception. They are well known for their deliberative decision making and stable cultures created to ensure stability. For example, the layers for approval of curricular changes, as well as administrative oversight, are numerous and require agreement among diverse groups. This can be summed up best by the phrase, "Universities are places where good ideas go to die." Traditions and long-standing practices create an environment in which it is easy for employees to revert to old habits rather fully embracing new processes. Individuals and groups within institutions create inertia that is difficult to overcome. Threats to pockets of expertise introduced through process changes can result in efforts to sabotage or delay changes. Established power relationships will change as processes change, creating an ambiguous, and uncertain environment that employees will resist (Katz and Kahn, 1978). Finally as current resource and reward allocations change to support new processes, employees are threatened and will work to maintain the status quo. Overall, the culture of higher education, which has resulted in universities and colleges that are among the oldest surviving institutions in the world, is enduring and difficult to change.

However, for LHE to become integrated into the DNA of the institution, changes must occur. This is accomplished by intentionally aligning institutional practices and organizational structures to support LHE. Alignment can be achieved in multiple ways (Balzer, 2010). A new college or university can be started anew or through merger/ acquisition, and the founding leader(s) can establish a culture and organizational structure designed to institute LHE principles and practices. A second alternative is "rapid evolution" where LHE can be introduced more quickly if there is a well-accepted shock to the system (real, imaginary, or occasionally manufactured!) that creates a natural opportunity to introduce LHE. For example, the closure of similar institutions due to insolvency or dramatic drops in enrollment provide the opportunity for leaders to implement immediate changes to mission, plan, organizational design, and policies and practices that align with LHE principles and practices. A third approach is a slower form of evolution, where a carefully designed organizational intervention is implemented that will incrementally move the institution toward alignment with LHE principles and practices. This might include, for example, the gradual roll out of a university-wide LHE training program or the intentional practice of requiring all new managerial hires to have some background in Lean principles and practices or quality systems, that eventually change employee skills, motivation, performance goals, etc., that help shape the structure

of the institution. Finally, the institution may prefer to follow what is characterized as "hopeful evolution," where opportunities naturally present themselves to allow college and university leaders to implement and demonstrate the effectiveness of LHE principles and practices, in the hope that small successes will lead to wider interest and implementation – and eventually changes is the structure of the institution that support LHE.

Overall, higher education institutions have the choice as to how they become institutionally accepting of LHE principles and practices so that the full potential of the benefits of LHE become the DNA that drives the institution forward. Ultimately, a college or university would hope to have the institutional structure and major practices in alignment to ensure the effective implementation of LHE: strategic plan, personnel practices, leadership practices, organizational design and structure, motivation and reward practices, communication practices, team design and roles, decision-making practices, workplace climate, and bases of power and influence. For example, a strategic plan that embraces LHE as the operational strategy, personnel practices that select for and train Lean skills, and motivation and reward practices that incent and recognize successful LHE initiatives will all work in concert to establish an institution's DNA committed to LHE. The careful alignment of major aspects of organizational structure and practices builds in layers of redundancy that support its implementation, making it difficult for any individuals or group of individuals to ignore LHE.

Strategic planning, Lean leadership, and getting help for LHE

Lean must guide strategy:

> Lean cannot be just one of 10 elements of your strategy. It must be the foundational core of everything you are trying to do; that is how it becomes your culture. Don't just do Lean; be Lean (Byrne, 2013).

The Lean principles of respect for employees and continuous improvement will enable leadership to focus on the value to be realized by beneficiaries and the cumulative gains in cost reduction and improved service realized through reduction of waste.

Strategy, in turn, must then guide LHE implementation (Womack and Jones, 2005). The choice of LHE initiatives must align with organizational strategy. Once the key drivers of value are prioritized in the institution's strategy, the institutional practices and processes that undergird the key drivers will be among the first areas addressed in a LHE implementation. For example, if the strategy is to provide academic support services that exceed the expectations of prospective executive MBA students to grow enrollment and student success, those services critical to this targeted group of students (e.g. scheduling and registering for classes, paying bills, purchasing books, submitting assignments, etc.) become the first targeted LHE initiatives.

While strategy guides how LHE will be focussed, leadership is the linking pin between the strategic plan and LHE implementation. According to Emiliani (2012), Lean leadership is beliefs, behaviors, and competencies that demonstrate respect for people, motivate people, improve business conditions, minimize or eliminate organizational politics, ensure effective utilization of resources, and eliminate confusion and rework. Fundamentally, "leadership" at a Lean university or college will require aspiring Lean leaders to learn many new things, both technical and behavioral (Balzer, 2010; Emiliani, 2012), and master the nuances and details of Lean management in order to skillfully lead a Lean transformation. Thus, the careful alignment between strategy and Lean leadership will help eliminate examples of "waste in leadership practices" that may impede or prevent

LHE success. These include first, waste of focus, ensuring the critical objectives are clear and not lost in translation as they flow down from the president through all levels of the institution; second, waste of structure, ensuring that alignment of institutional practices is complete and does results in employee behaviors consistent with LHE; third, waste of discipline, ensuring that employee goals and behaviors do not drift over time or when pressures at the college/university question institutional commitment to LHE; and fourth, waste of ownership, ensuring employee autonomy and ability to implement LHE.

Poor understanding of Lean principles and practices by senior managers seriously limits their ability to explain and teach LHE to middle managers. Emiliani (2012) notes that in most Lean transformations, senior managers do not do the things they expect middle managers to do. That is, senior managers support LHE, but they do not act as role models by applying LHE principles and practices to their own work and other work activities (e.g. by participating in rapid improvement workshops or "kaizens"). To state that Lean is important and then personally do nothing, sends a clear message that walking the talk of Lean management is not important: "Lean is for lower-level people to do, not me."

To be effective, higher education leaders should learn more about LHE and find a Lean teacher. Lean businesses and organizations in the community, particularly Lean hospitals (since hospitals are more similar to institutions of higher education: service-based bureaucracies run by the professional staff who are more closely aligned with their profession than the institution, and are focussed on the mission of service more so than the need for net revenue) (Kenney, 2011). Black belt Lean Six Sigma alumni can serve on advisory boards and actively guide LHE interventions. Leaders can find classes and faculty that can fully prepare their employees to implement LHE and train additional LHE practitioners throughout the college or university.

Facilitating an institution-wide transition to LHE
Respect for employees and continuous improvement must guide the transition to LHE for any institution. LHE is designed to reduce waste, not reduce number of employees. The broad participation of beneficiaries (including employees) in planning for LHE is required, and without a belief that their jobs are secure, employees will not participate. Employees must also be involved in identifying pilot projects that demonstrate the benefits of LHE. Through pilot projects LHE becomes a "hands-on" experience, rather than a classroom exercise. Rapid improvement workshops (Kaizen) can be implemented to make rapid changes, which must be publicized to create more LHE supporters and change agents (Laraia *et al.*, 1999). Once identified the institution must invest in training to ensure that supporters have the knowledge and develop the behaviors needed to implement and sustain LHE.

It can be very useful to establish an infrastructure to support and promote LHE and create a Lean culture. An office, such as a "Lean Academy," can oversee and promote LHE. A key responsibility of such an office would be articulating the ROI from completed LHE initiatives (Harrington, 1987). The office would also advocate for hiring, training, and promoting LHE leaders who would drive strategic planning, policy deployment, and goal setting. Those leaders could be expected to make LHE mandatory, by setting LHE goals aligned with institutional goals and using metrics that make Lean a part of the job. Leaders must create accountability, well-functioning LHE teams, and incentives that cross-divisional silos and levels of the institution.

By maintaining a focus on the value delivered to beneficiaries, the university will be reorganized by critical processes or service streams. A focus on respect for employees and continuous improvement will enable bottom-up initiatives rather than top-down directives. Once LHE is adopted as a means to improve the efficiency and effectiveness of the institution, all activities should conform to the Lean practices. The opportunities for improvement through LHE are unlimited; once mastered within the institution, LHE practices can extend outward into the college's or university's "supply chain," including K12 partners who provide future students and local employers who hire graduates. Overall, colleges and universities can reap significant benefits from LHE by learning from its successes and anticipating and addressing potential pitfalls.

Conclusion

We present several recommendations for implementing LHE. The specific recommendations have not been formally evaluated, although the principles have been supported via the cases described. As more institutions embrace LHE, more formal evaluations of the impact of these projects on the beneficiaries, employees, and institution will offer greater guidance to LHE practitioners, including a more complete evaluation of our structured, step-by-step approach for implementing institution-wide Lean initiatives in HE.

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Further reading

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