

Spotlight on an institution in one of the constituent groups: small institutions, community colleges, comprehensive/doctoral institutions, or research universities

SMALL INSTITUTIONS

GETTING BETTER EVERY DAY

While the world of higher education has largely been slow to adopt continuous improvement strategies—such as Lean, Six Sigma, or TOC (Theory of Constraints)—

Berea College has successfully started using all of them to improve how we serve others, reduce or avoid expense, and boost employee productivity and morale.

As one of just seven federally recognized Work Colleges, our unique institution in Berea, Ky., provides a no-cost tuition scholarship for all 1,600 students, who are required to work at least 10 hours per week. Only academically promising students with very limited economic means are eligible to enroll in the college, which emphasizes service to the people of Appalachia and beyond.

Being endowment-driven, Berea makes the commitment to serve its student population through the no-tuition promise, which creates a sense of urgency for us to be excellent financial stewards and caring service providers. The use of continuous improvement strategies enhances our ability to be both.

Less Pain, More Gain

Our journey with continuous improvement began in 2013, with the establishment of a cross-disciplinary steering team. The team included two professors; the college controller; and representatives of such diverse areas as advancement, career counseling, student life, IT, and dining services.

Some steering team members had experience with continuous improvement techniques, while others did not. To give everyone a shared vocabulary and common base of knowledge, the team attended the *Lean Applied to Business Processes* executive education course at the University of Tennessee, Knoxville, where they participated and learned together. After the intensive, week-long training, everyone returned to campus highly motivated to improve effectiveness and efficiency, but we didn't know what to expect from our colleagues.

As it is natural to be rather skeptical of something new—particularly if it originated in another sector, such as the corporate world—we used a personalized approach in launching continuous improvement. We asked staff and faculty, "What pain do you have in your work that we could help make go away?" That "pain" might be a process that takes too long, requires repetitive steps, or is simply frustrating to a customer or provider.

As we began our work, the steering team targeted projects that promised quick yet noticeable results. The strategy was to publicize the positive outcomes, generate a buzz on campus, and win converts to continuous improvement—and it is working. We have nearly 50 projects completed or in process, involving more than 100 employees and nearly 130 students.



Continuous improvement strategies have helped Berea College improve its processes and productivity—and resulted

in direct savings as well.

Noteworthy Projects

So far, completed projects have provided more than \$250,000 in either direct savings or cost avoidance. Here are two examples:

- ➤ **Dining services.** The director of dining services had requested capital funds for a brick-and-mortar addition to accommodate more freezer space, critical for meeting a goal of increased use of local foods. In the existing storeroom, we initiated a Lean 5S project, which is a workplace organization technique that focuses on five actions: sort, straighten, shine, standardize, and sustain.

The four-day project freed up 1,582 square feet of previously unusable space—more than enough to house the additional freezers. It also eliminated many items no longer used or needed, and resulted in a cleaner, reorganized storeroom with everything clearly labeled and arranged for first-in, first-out access. Previously, workers spent five or six minutes looking for an item; now, they are in and out of the storeroom within one minute. While this may not sound like much, it accumulates to more than \$3,400 per year in productivity savings. In addition, the college avoided spending more than \$50,000 to build the originally requested addition.
- ➤ **Facilities management.** In this area, we deployed Lean Value-Stream Mapping (VSM). With this technique, one charts every step in an existing process (current state), determines whether that step brings value, and then charts how the same process would look in a perfect world (ideal state), retaining only those steps that bring value to the customer of the process.

Through Lean VSM, we identified inefficient steps that created "windshield time" (traveling from place to place) associated with acquiring parts not in inventory—tasks that took time away from skilled technicians doing the work that makes them most valuable. Electricians and plumbers often had to drive to nearby stores to obtain parts not available in the stockroom (some costing as little as 38 cents!), and generating invoices that created significant front-office work.

We conducted a Six Sigma-style analysis of stockroom parts movement and implemented TOC inventory buffers and Kanban (a just-in-time scheduling system), thus rebalancing inventory based on historical statistics.

Next, we negotiated with local suppliers to deliver many parts as needed. By reducing trips, we saved not only gasoline expense, but also gained productivity: On average, facilities management staff completed 69 more work orders each month. This resulted in a happier campus, as evidenced by higher customer satisfaction scores. In addition, stockroom inventory turns more than doubled, while average inventory dropped by \$15,000.

Parts invoices managed in this process fell from almost 200 per month to less than a half-dozen, dramatically increasing front-office productivity. The project provided cost savings or avoidance of nearly \$114,000.

A Strong Start

Other continuous improvement projects have touched nearly every part of campus. The human resources department has reduced use and storage of redundant, paper-based information. Berea's famous auxiliary crafts operation has increased product availability and sales, and Student Services has cut the time to provide student refunds.

On the academic side, Berea has integrated continuous improvement into the student labor program and some classes. This has allowed students to learn about Lean, Six Sigma, and TOC, and then put the techniques into practice on projects as diverse as donor acquisition, campus fire safety, and the freshman move-in process. This valuable work experience makes students more marketable to employers upon graduation.

We hired a full-time continuous improvement manager, a cost-neutral addition, using an open facilities management position. We also reallocated four existing student labor positions, which now report to the manager. This small team keeps Berea focused on continuous improvement all day, every day. An additional 13 staff and faculty have now attended the week-long training at the University of Tennessee, Knoxville, and we've also brought the instructor to our campus for a one-day overview of Lean techniques for another three dozen employees.

Somewhat surprisingly, the college is quietly embracing the philosophy of continuous improvement. The chatter on campus is that these techniques can make work life better—and save money. The steering team meets monthly to review open projects, identify potential new projects, and work to maintain momentum. We hope to embed continuous improvement as part of Berea's

mindset and culture, so everyone is always thinking about how to make everything just a little bit better.

SUBMITTED BY [Derrick Singleton](#), vice president of operations and sustainability,
Berea College, Berea, Ky.