

Tuition hikes and cutting programs are common responses to budget shortfalls at universities. A better alternative is to apply lean principles to eliminate waste and reduce costs. In the education process, students (raw material and work in process) move along a series of courses (work centers) where teachers (operators) add new knowledge and skills (value). In four to five years, students (work-in-process) become graduates (finished goods). Some students need remedial work (rework) some fail (scrap), and some need employer training (defects). As it stands this process is inefficient and wasteful. Waste can be seen in many areas including administration, curricula, classrooms and textbooks.



# Lean education:

applying lean concepts to education

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# UNIVERSITY LOGISTICS

## Waste in Administration

Administrative costs are the primary source (see table below) of cost increase in many universities. For example, at one university with a 33 percent increase in student enrollment, faculty increased 40 percent in number and 60 percent in dollars, whereas administrators increased 124 percent in number and 154 percent in dollars. This scenario takes place at a Midwestern university depicted in "Administrative Growth At the 'University': A Case Study," Leon B. Hoshower and David Kirch.

Increase in Administrative Salaries (at a Midwestern university)			
	1982	2000	% Change
Total number of students	14,576	19,327	33%
Total number of faculty (full and part-time)	812	1,135	40%
Total number of administrators	535	1,457	124%
Total salaries of faculty	\$36,297,228	\$58,107,451	60%
Total salaries of administrators	\$22,106,993	\$56,338,496	154%

Source: "Administrative Growth At The 'University': A Case Study," Leon B. Hoshower and David Kirch, Journal of College Teaching & Learning: January 2005 Volume 2, Number 1, pages. 47-52.

go lean >

Some examples of administrative waste include:

- Ph.D.s (many administrators come from the ranks of faculty) doing work that can be done by less expensive staff
- Too many policies and procedures, often obsolete, irrelevant, and conflicting
- Documents moving from person to person and waiting in their in and out boxes
- Too many authorizations and “Ms and Ms” (meetings and memos)
- Admitting ill-prepared students and offering remedial courses
- Keeping programs with low enrollments

### Lean approach manufacturing

Using lean methods, organizations slashed costs and saved time. Universities can achieve similar results. A powerful way to identify waste is to ask questions such as:

- What work is being done? Who needs this?
- Is this the best way to do it? Can it be done differently?
- Who is doing it? Is this the right person? Can someone else do it?
- What happens if this work is not done?

Several years ago, I designed a correspondence course for the University of Wisconsin Extension. I was told to get approval from one administrator. Later on when I wanted to revise the course, I was told to get four approvals from assorted administrators. I felt it was waste, got one approval and sent paperwork to Madison. No one asked a single question and I got paid. I wonder what was the value of the other three approvals?

### Waste in curricular

Curricula evolve over time and become cluttered with new topics being added by different people at different times with little or no understanding of total curriculum. Some curricula wastes include:

- Duplicate, irrelevant and obsolete topics
- Same topics taught in multiple courses
- Courses lacking appropriate prerequisites
- Students filling required credits with irrelevant courses
- Students taking courses out of sequence or without prerequisites

### Lean approach

5S and QFD (Quality Function Deployment) can be valuable tools to declutter and design lean and effective curricular (see “Applying Lean Principles to Design, Teach and Assess Courses,” Management Accounting Quarterly, spring 2007).

### Waste in classroom

Classroom waste is subtle and often goes unnoticed. Some examples are:

- Teaching closely related topics such as product costing (job, process, ABC...) and auditing (cash, securities, ...) as separate topics
- Spending too much time on rules and regulation (FASBs, etc.) with little focus on concepts
- Excessive number crunching, multiple choice tests with little focus on written and oral communication
- Excessive explanations (spoon feeding)
- Waiting for late arrivals, ill-prepared, and day dreamers to catch up with rest of the class

### Lean approach

Five minutes saved in a 16-week course that meets thrice a week can add up to four (16x3 x5 /60) hours and a whopping 200 hours in a 150-credit program. Some proven approaches to save class time are:

- Allow only those with proficiency to register for courses
- Develop strict policies and make students responsible for their actions
- Teach related topics as a family, an approach similar to manufacturing in cells (see above paper for details).
- Focus on concepts and learning to learn instead of memorizing rules and regulations (e.g., FASB’s and audit procedures). Remember how we struggled to memorize the crazy acronyms? What is their value and relevance?

### Waste in textbooks

Textbook waste includes:

- Too many supplements prepared by different individuals with little cohesion to text material and relevance to learning
- Multi-colored pages and glossy photos. In a survey of 50 faculty and 200 students, participants overwhelmingly said that most supplements are a waste and glossy pictures are a distraction
- Typical texts contain about 10 to 15 percent as white space (margins, blank space, etc.), which can add up to 100-150 pages in a 1,000 page text
- Heavy books breaking students’ backs

### Lean approach

Eliminating hard covers, heavy paper, glossy photos, duplication and excessive explanations; minimizing number of colors, white space, and supplements; streamlining content, are some ways to save students’ budgets and backs.

# Challenge to Educators

A lack of experience, fear of failure, potential for reprisals, and lack of administrative support discourage teachers from changing their syllabi, pedagogy, and assessment. A few years ago, at a lean meeting, CEOs of several Wisconsin companies that apply lean principles, challenged university chancellors by saying: “If we can apply lean to manufacturing and health care, you can apply lean to education.” Eliminating waste is a better solution than increasing tuition fees or limiting course offerings. It is time for academicians to take a bold step, learn from the industry experiences and apply lean principles to education. Lean can make education affordable to many.

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