ACHIEVING OPERATIONAL EXCELLENCE: LEAN HIGHER EDUCATION

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The Need for Change in HE

Funding challenges: Financial support for higher education (HE) has eroded and shows no sign of returning to previous levels of support

Accountability to our "beneficiaries:" Labor intensive sector relying on a "cost-plus" business model; Increasing student loan burden impacts career choices and standard of living

Accountability to our "sponsors:" Perception of HE as inefficient and expensive has led to external pressures to contain costs; Greater public accountability of HE is demanded

Competitive advantage in an increasingly competitive marketplace: commoditization of HE; Technological advances in the design and delivery of HE

Traditional Responses (with Mixed Results)

Traditional Reactive Responses	Stay the course: Challenges are transitory
	Cross your fingers: Continue to operate on "cost-plus" basis
Traditional Proactive Responses	Get through today: Plans of action for the near future (e.g., early retirement incentive, sweep budgets)
	Plan your way out: Bold plan (new mission, university-wide initiatives, strategic plan, culture shift) driven by leadership

A (Not So) New Alternative: Lean Higher Education (LHE)

- ***A WORKING DEFINITION**: LHE is a problem-solving framework used to increase the value and performance of university processes. Grounded in the principles of continuous improvement and respect for people, the successful application of LHE will meet the expectations of those served by the processes, engage and develop the employees who deliver the processes, and enhance the efficiency and effectiveness of the university.*

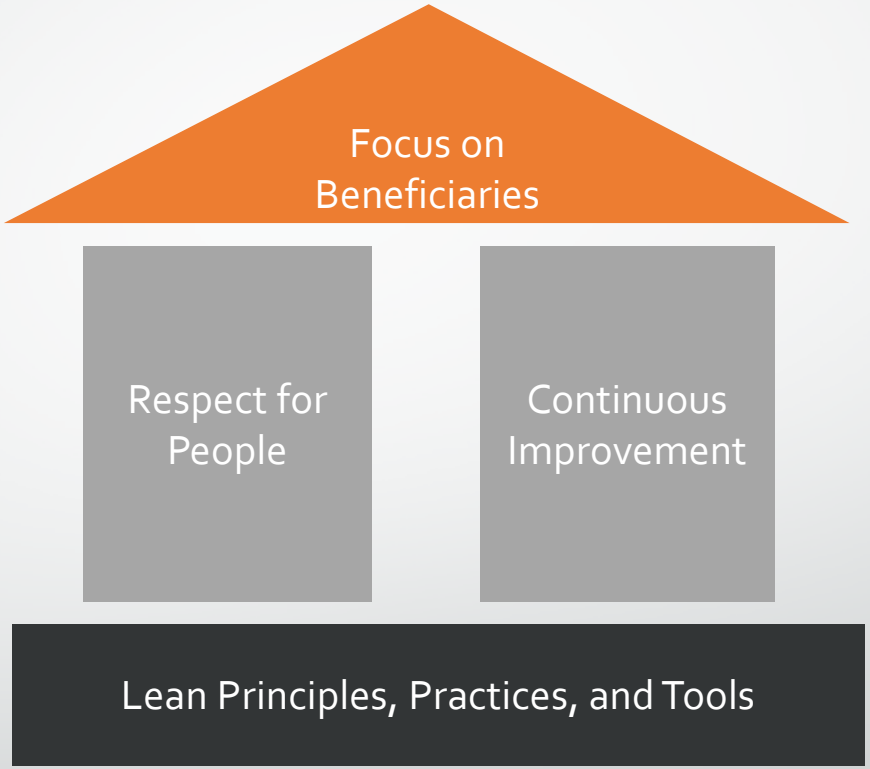
Examples of HE Processes (i.e., Services, Sets of Activities)

Admitting students	Hiring faculty & staff	Moving students into residence halls	Purchasing supplies or services
Adding or dropping a course	Establishing a partnership with an international institution to support education abroad	Remodeling laboratory space for faculty research	Reserving a classroom
Student mental health assessment and therapy services	Offering a new course or major	Approving a grant submission	Advising students
Preparing mandated reports for governmental agencies	Reimbursing professional travel	Processing gifts from donors	Scheduling instructors for summer courses

What Important/Critical Processes May Be Broken at Your Institution?

- Which important/critical process at your institution is failing to meet the expectations of those who are the **beneficiaries**/recipient of that process?
- Which process at your institution is frustrating and overburdens the **employees** who perform that important/ critical process?

The Lean House: Metaphor for the Philosophy of Lean



Building on the Two Pillars of Lean

Continuous Improvement

Create a culture that constantly examines and improves work processes using LHE principles and practices

Respect for People

Engage employees who already know which processes are broken and teach them how to use LHE to fix them

Why Lean Higher Education?

- embraces organizational excellence through a comprehensive approach to operational excellence
- offers a practical framework and tools (supported by research) to support relentless continuous improvement
- favors implementing solutions quickly
- meets the expectations of internal and external beneficiaries
- values, engages, & develops the full potential of all employees
- frees up resources for savings and/or reinvestment
- win-win-win for beneficiaries, employees, and university
- transforms the university into a true learning organization

- Balzer, 2020

Lean Evolution: Moving Beyond Manufacturing

NAICS 2017 Sector & Associated Publications (Balzer et al. 2019)

- **Agriculture**, Forestry, Fishing and Hunting: *Lean Farming*
- **Mining, Quarrying, and Oil and Gas Extraction:** *Implementing Lean Production in Copper Mining Development Projects: Case Study*
- **Utilities**: *Lean Energy Management in Manufacturing*
- **Construction**: *Lean Construction Management: The Toyota Way*
- **Manufacturing**: *The Toyota Way*
- **Wholesale Trade**: *Transition from Push to Pull in the Wholesale/Retail Sector: Lessons to be Learned from Lean*
- **Retail Trade**: *A Stitch in Time: Lean Retailing and the Transformation of Manufacturing--Lessons from the Apparel and Textile Industries*
- **Transportation and Warehousing**: *Applying a Lean Approach to Identify Waste in Motor Carrier Operations*
- **Information: Making IT Lean**: *Applying Lean Practices to the Work of IT*
- **Finance and Insurance**: *Lean in Finance*
- **Professional, Scientific, and Technical Services**: *Improving a Dental School's Clinic Operations Using Lean Process Improvement*
- **Management of Companies and Enterprises**: *Lean Management of Environmental Consulting*
- **Administrative and Support and waste management and Remediation Services**: *Lean Six Sigma for the Office*
- **Educational Services**: *Lean Higher Education: Increasing the Value and Performance of University Processes*
- **Health Care and Social Assistance**: *Readiness Factors for Lean Implementation in Healthcare Settings - a Literature Review*
- **Arts, Entertainment, and Recreation**: *5 Clever Lessons from Walt Disney about Lean Management*
- **Accommodation and Food Services**: *Introducing Lean Service to the Blended Learning Educational Environment Structure for Food and Beverage Preparation*
- **Other Services** (except Public Administration): *LEAN Principles Provide Opportunities for Catholic Health Care Organizations*
- **Public Administration**: *Lean Government and Platform-Based Governance—Doing More with Less*
- **Real Estate Rental and Leasing**: *Transitioning to a Lean Paradigm: A Model for Sustainability in the Leasing and Rental Industries.*

Examples of Lean HE Around the World

- Bowling Green State University (US)
- Carleton University (CA)
- Edinburgh Napier University (Scotland)
- Macquarie University (AU)
- Miami University (US)
- Michigan Technological University (US)
- UiT the Arctic University of Norway (Norway)
- University of Central Oklahoma (US)
- University of Michigan (US)
- University of Iowa (US)
- University of Notre Dame (US)
- University of Sheffield (Great Britain)
- University of St Andrews (Scotland)
- University of Strathclyde (Scotland)
- University of Washington (US)
- University of Waterloo (CA)

Many Universities, Many Lean Processes

HE Institution	Example of Process Improved
U Central Oklahoma	Facilities work order process
U New Orleans	Grad student payroll process
U Iowa	Hiring process
U Scranton	Enrollment inquiry process
Rensselaer Polytechnic	Curriculum design process
UC Berkeley	Printing services
U Washington	Research financing process
U Minnesota	Student readmission process
U Wisconsin	Info technology process
U Virginia	Events/Calendar process
U Texas – Dallas	Banking reconciliation process
Carleton University	Student exchange application process

The Breadth of LHE Applications for Challenging and Improving Processes

- **Rapid Improvement Event (Kaizen)**
- Lean Structured Problem Solving
- 5S Workplace Organization
  - Sort, Set in Order, Shine, Standardize, Sustain
- Daily Lean: Lean Stand Ups/Huddles, 3C (Concern, Cause, Countermeasure), “Just Do It”
- Lean Meetings
- 3P (Production, Preparation, Process)
- Strategic Planning/Deployment (Hoshin Kanri)

The LHE Problem Solving Framework for Business Process Improvement

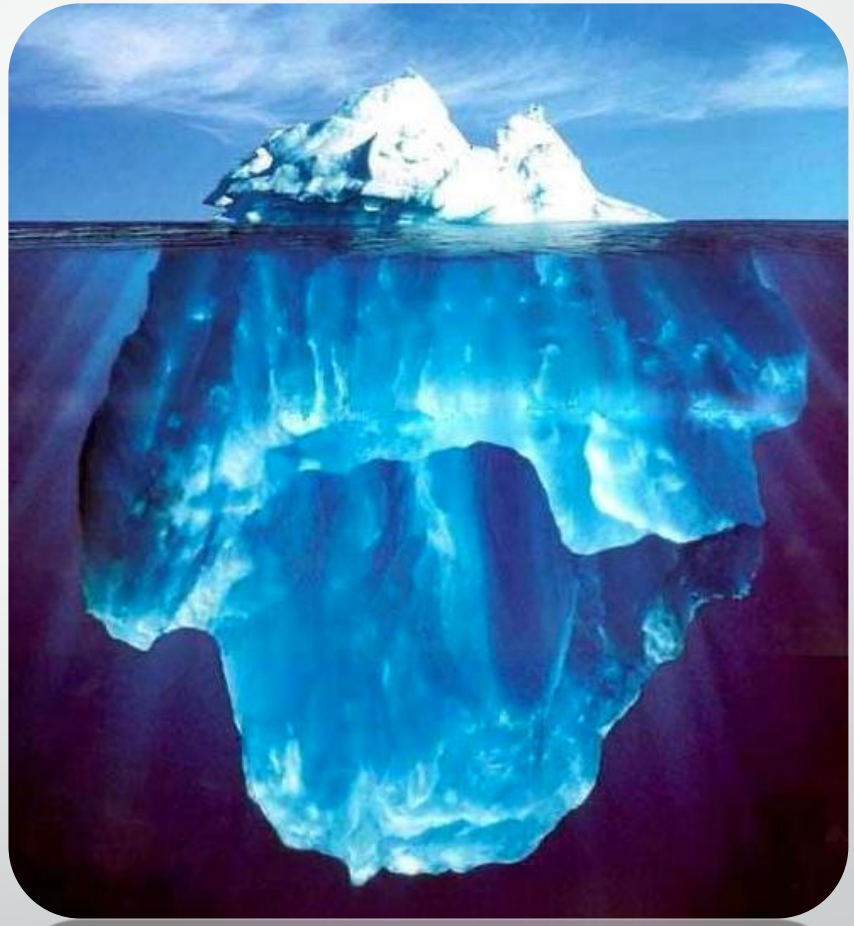
- Embedded in University-Wide Organizational Excellence Model
  - Project management; Data driven; KPI/Metrics; Change management; LHE
- Supported by a University-Wide Philosophy: Respect for People and Continuous Improvement
- University-Wide Model for Problem Solving
  - PDCA: **P**lan, **D**o, **C**heck, **A**ct
  - DMAIC: **D**efine, **M**easure, **A**nalyze, **I**mprove, **C**ontrol
- University-Wide Approach to Problem Solving
  - Adopted institution-wide; Modeled and taught by all supervisors to all employees

One Application of LHE: The Rapid Improvement Event (Kaizen)

1. Determine who are the beneficiaries (internal and external clients) and what they value from the university process
2. Analyze the current process from perspectives of both university & beneficiaries to identify steps that add or don't add value
3. Propose a new process using LHE to (a) eliminate waste and (b) improve flow - with no new resources assumed
4. Implement the new process and evaluate performance against established metrics
5. Achieve perfection through continuous improvement & radical transformation of process (& maybe resources later)

Learning to See: Waste

Customer calls/ complaints/ loss
Waiting
Mistakes (and corrections)
Stress & dissatisfaction



- Transportation
- Incorrect inventory
- Wasted motion
- Overproduction
- Defects & errors
- Over processing
- Wasted human potential
- Slow machines
- Duplicated effort
- Waste & storage
- Paperwork
- Approvals

Case Studies of LHE: Examples (Balzer 2010; 2020)

Examples of the benefits of LHE can be found across:

- General HE Processes
- Academic Support Processes
- Academic Processes

BGSU Counseling Center

Problem: Long wait for student counseling services

	Before	After	% Improvement
Student waiting time until initial appointment (days)	5 days	< .1 (same day)	**99.8%**
Student waiting time from initial appointment to assignment to counselor (days)	16 days	< .1 (same day)	**99.9%**
Number of emergency counseling service interviews	356	213	**40.2%**
% "No Shows" for consultation & assessment interviews	20%	< 1%	**95.0%**
Number of students requesting counseling services	761	950	**24.8% increase**
Number of counseling staff	12 FT 1 PT	12 FT 1 PT	**NO INCREASE**

Rapid Improvement Event (RIE) Performance Scorecard

Confirming Student Status Process (U St Andrews)

Problem: Students cannot open bank accounts etc.

Measure	Before	After	Difference
Lead Time (beginning to end)	7-10 business days	2 minutes	Approximately 7-10 business days (99.9% less)
Number of Staff Handoffs in Process	Up to 7 staff members	1 staff member	6 staff members (86% fewer staff handoffs)
Filing, Retrieving, and Discarding Unwanted Letters	4500+	n/a	4500+ (≈ 100% reduction)
Number of Steps in Process	32	7	78% decrease

Rapid Improvement Event (RIE) Performance Scorecard

Lean in Daily Work + Model Cell: Multiple Processes

(U Michigan)

LHE Project	Outcomes
Accounts Payable Process	- Time to approve a new vendor account decreased 50% - Time to upload payment data decreased 50% - Enhanced customer services levels (reduced cycle time, fewer errors)
Medical Faculty Eligibility for Medicare Reimbursement	- Time to approved enrollment reduced 83% - Allowed for an additional $1.5M in billable physician services
Cabinetry Shop (construction services)	- "Pull system" reduced in-process inventory, with saved dollars used to purchase new woodworking machine; added to the new streamlined layout with reduced waste of movement
Shared Services "Model Cell" for Lean in Daily Work	- Over 20 HR and financial services offerings with 1M+ annual transactions to all academic and nonacademic units - 2018 Q1: removed $62K in waste, saved $46K for client, and absorbed $1k in additional work

Faculty Hiring Process (BGSU)

Problem: Hiring process too slow and complex

Measure	Before	Projected	Difference
Lead Time (beginning to end) – Tenure Track	≈ 23 weeks	≈ 13 weeks	10 weeks (44% less)
Number of Steps	81	55	26 (32% fewer)
Number of Forms	3	1	2 (67% fewer)
Applicant Communication	≈ 1	Multiple templates in tool box	100% or more
Regulatory Compliance	High	High	Maintained

Rapid Improvement Event (RIE) Performance Scorecard

Curriculum Changes (U Strathclyde)

Problem: Not complying with established quality requirements

Measure	Before	After	Difference
Late Submissions	72%	0%	100% reduction
Returned for Corrections	82%	0%	100% reduction
Retrospective Curriculum Changes	36%	0%	100% reduction
Staff Time Spent on Approval Process			55% reduction

Rapid Improvement Event (RIE) Performance Scorecard

General Conclusions

- **LHE benefits all HE constituencies:** Students and parents, faculty and staff, administrators and oversight boards, etc.
- **Multiple pathways to LHE success:** With or without support from top leadership, with or without a formal office to lead LHE, using RIEs or other applications of LHE (e.g., LDW), etc.
- **LHE journey can have multiple starting and ending points:** Voluntary adoption in limited areas vs. institution-wide adoption, centralized vs. decentralized, including academic processes vs. support processes, etc.
- **Success across countries, cultures, and HE systems:** Public vs. private, western vs. non-western, 2-year vs. 4-year, etc.

Improvements on Metrics That Matter: Miami University of Ohio

LHE efforts since inception in 2011 through May 2019:

- Number of Lean Ideas Submitted: 1853
- Number of Projects Completed: 1514
- Cost Reduction: $27,566,441*
- Cost Avoidance: $42,649,963*
- Revenue Generated: $13,105,838*

**Note. Calculated savings for first year of LHE project, providing a conservative estimate of financial impact on the university*

Improvements on Metrics That Matter: University of Strathclyde (UK)

Documented improved performance against strategic key performance indicators:

- Cumulative Number of Improvements: Over 4000
- Staffing Capacity Released Annually: 27,000 Hours (i.e., 675 FTE employees)
- Annual Efficiency Savings: £450,000 ($585K)
- Increase to University Revenue: £15 Million ($19.5M)

LHE's New Mindset to Execute HE Strategy

LHE rethinks the historical business costing model

- Tuition – Cost = Net Revenue

LHE "Non-Zero Sum" approach: Operational tactics for doing more with less

- Engaging employees' minds in LHE problem-solving approach (continuous improvement, remove waste) to use fewer and fewer resources while adding more value to beneficiaries

LHE is "fast and nimble:" Accelerating the speed of change

- Teams are "deputized" to implement changes immediately following the 3-5 day Rapid Improvement Event

LHE executes strategy using a common "problem-solving" management system

- Comprehensive, integrated, and proven problem-solving process for choosing, diagnosing, and fixing broken processes

LHE's New Mindset to Execute HE Strategy: Cost Reduction

- Historical business costing model:

  Selling Price = **Cost** + Profit

- Translated into traditional higher education model:

  Tuition = **Cost** + Net Revenue

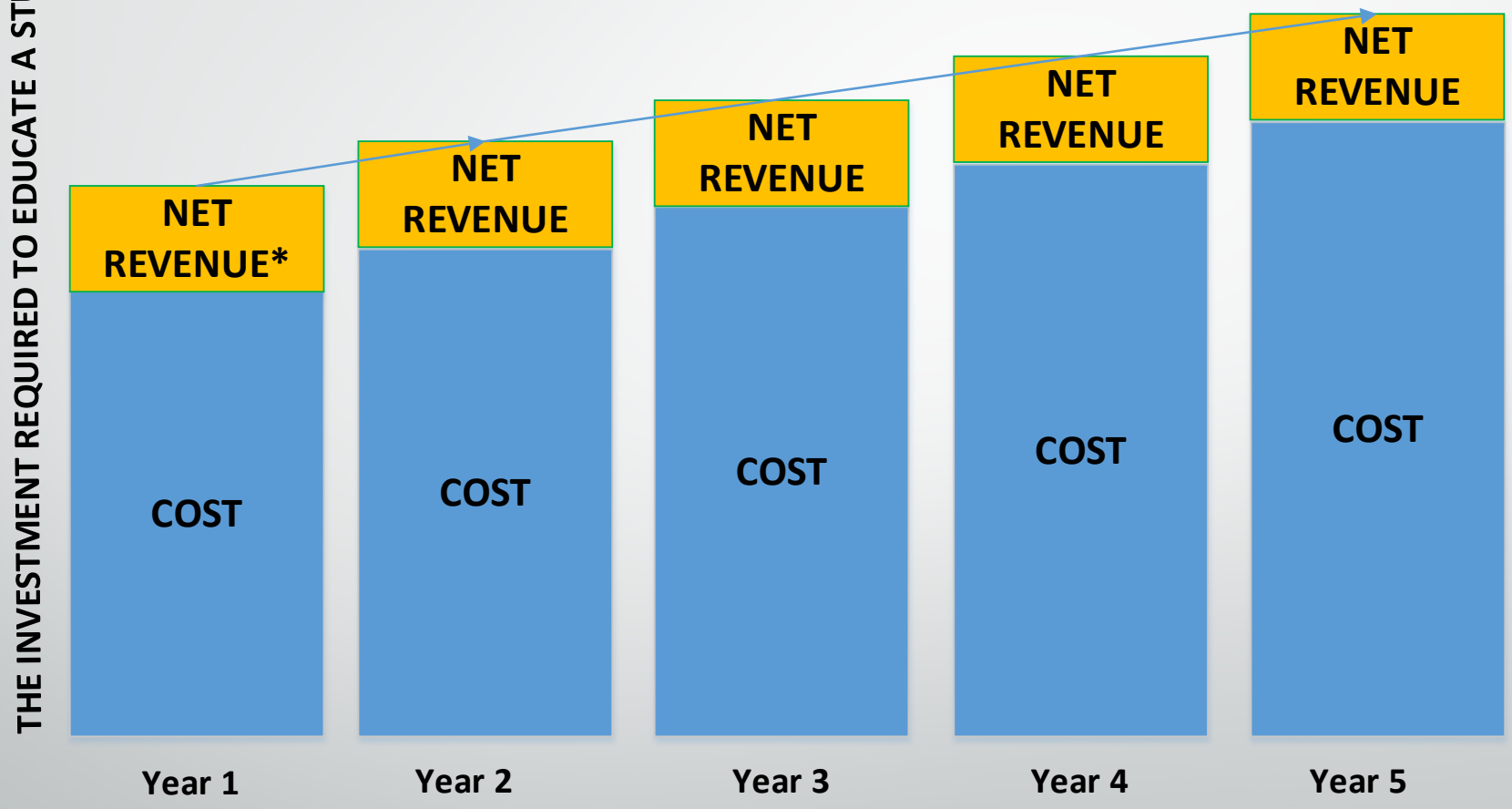
- LHE transforms the model:

  Tuition – **Cost** = Net Revenue

Cost Reduction creates extra revenue for strategic initiatives (investments in faculty and facilities, internal financial aid, etc.) and/or reduces expenses

TRADITIONAL THINKING:
PRICE OF HIGHER EDUCATION

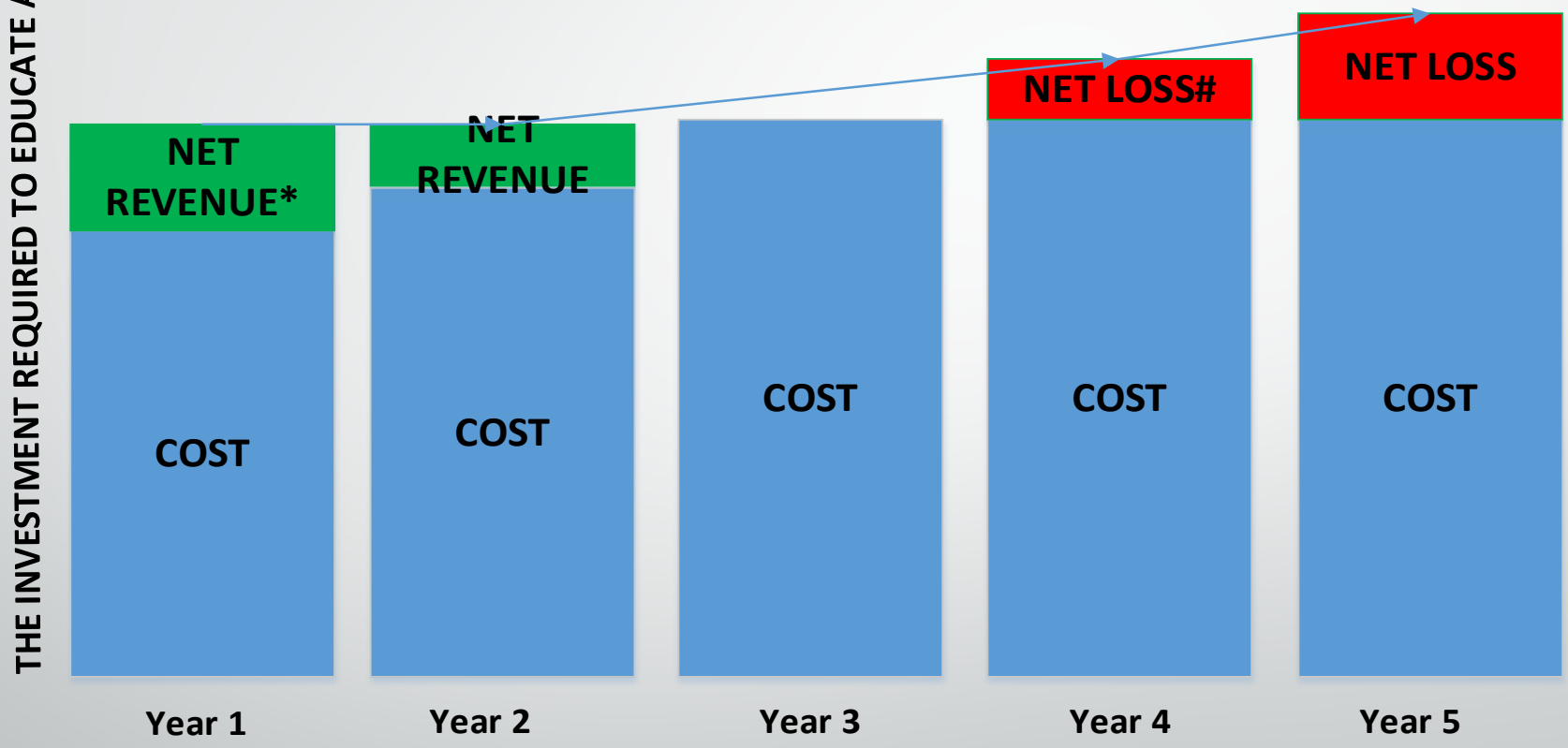
INCREASE TUITION AS COSTS INCREASE



**Net Revenue: Innovate & Invest*

TRADITIONAL THINKING:
PRICE OF HIGHER EDUCATION

TUITION FREEZE WITH ESCALATING COSTS

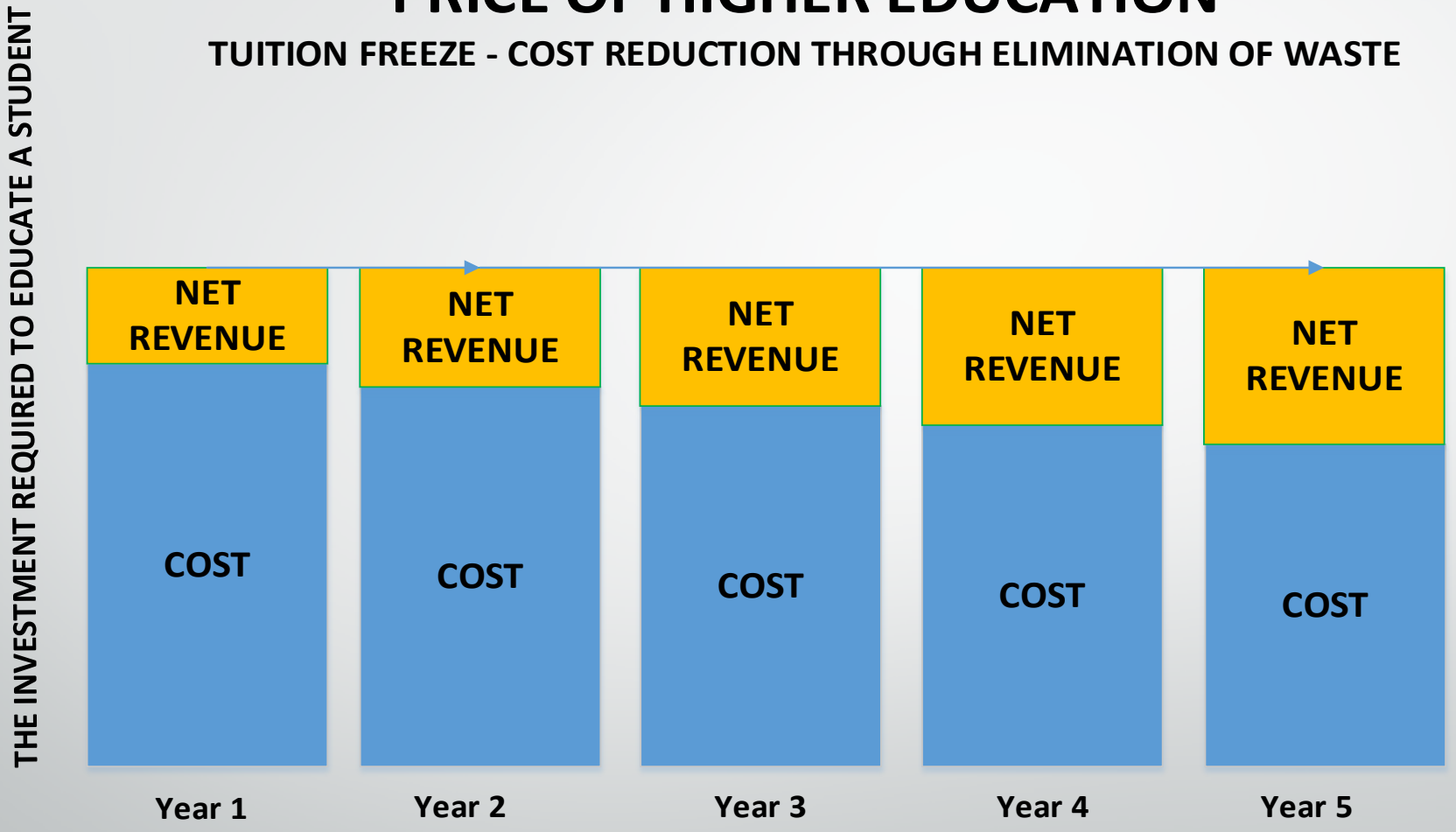


**Net Revenue: Innovate & Invest*

#Net Loss: De-invest

LEAN THINKING:
PRICE OF HIGHER EDUCATION

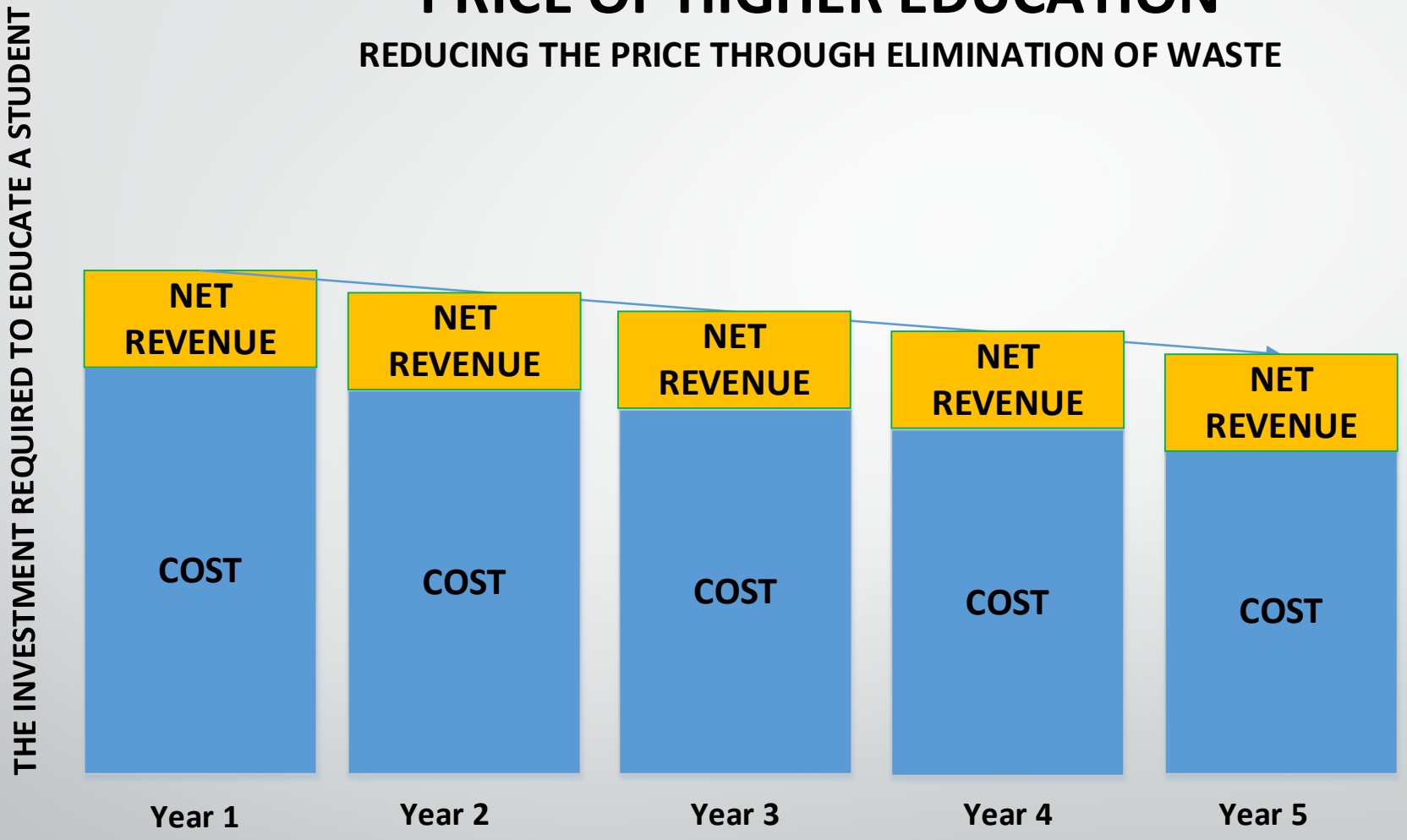
TUITION FREEZE - COST REDUCTION THROUGH ELIMINATION OF WASTE



**Net Revenue: Innovate & Invest*

LEAN THINKING:
PRICE OF HIGHER EDUCATION

REDUCING THE PRICE THROUGH ELIMINATION OF WASTE



**Net Revenue: Innovate & Invest*

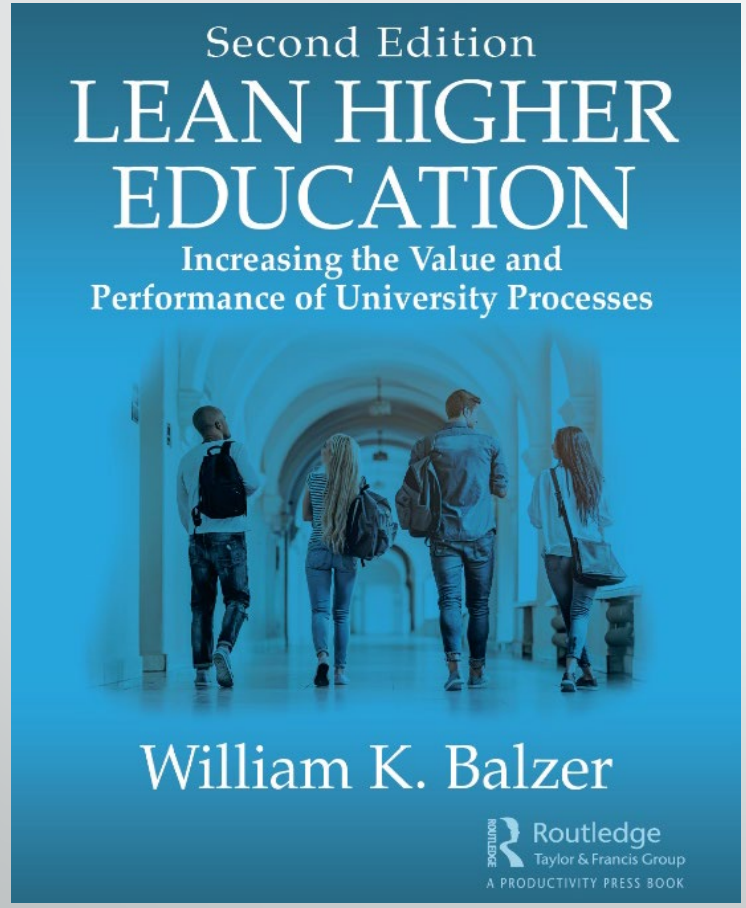
The Promise of LHE

- Focuses on the individuals we serve, not ourselves
- Empowers all employees involved in the process to help improve it
- An integrated set of principles & practices that have been demonstrated to work
- Can be implemented across institution or in areas ready to embrace LHE
- OVERALL: Win-Win-Win for beneficiary, employee, and institution

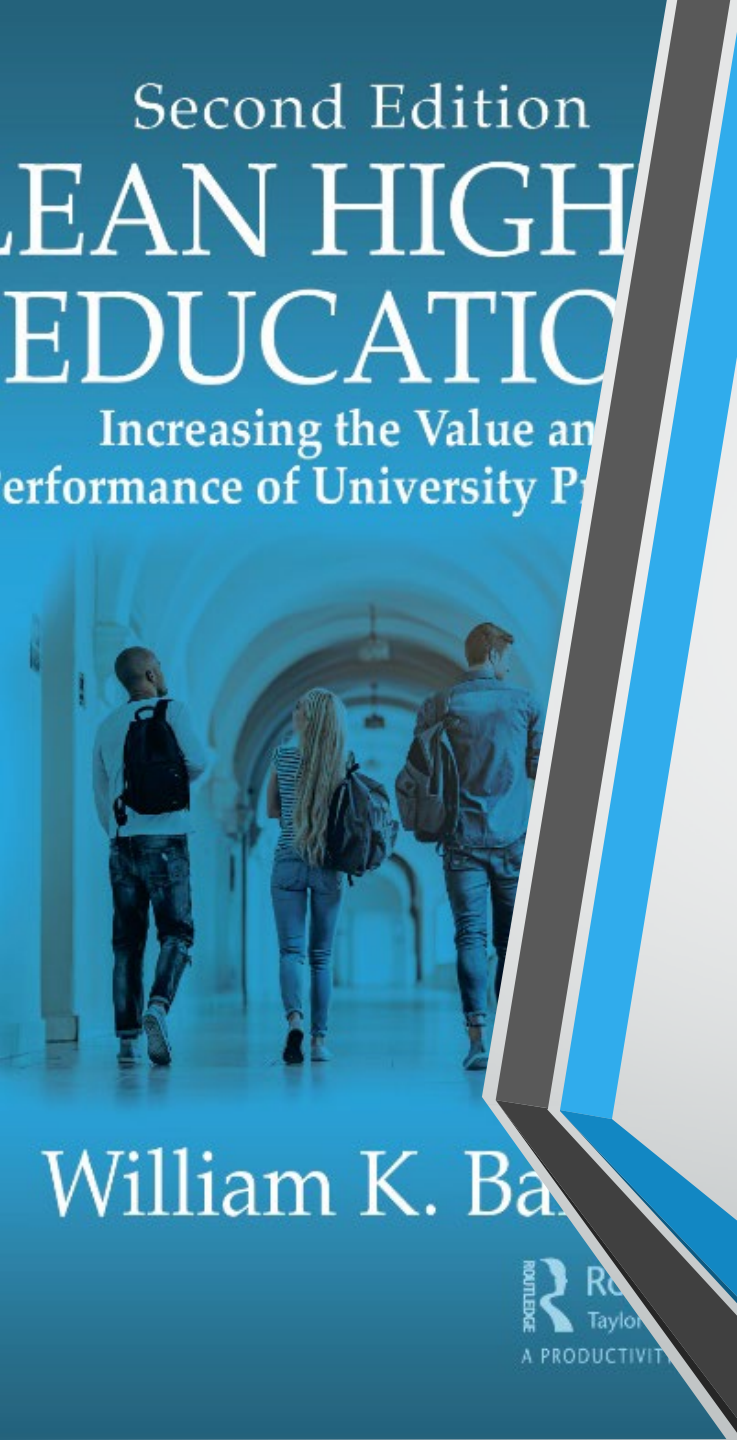
What LHE Is – and Is Not

- LHE **is** a powerful tool for implementing change in higher education that:
  - Meets the expectations of people who benefit from process
  - Frees up wasted resources for reinvestment in other areas (meet/exceed more and more expectations)
  - Values & engages all employees; enriches job autonomy & responsibility
  - Transforms your institution into a true learning organization
- LHE **is not** a tool for organizational retrenchment that is designed to:
  - Cut costs
  - Fire “redundant” employees

Lean Higher Education



"LHE can provide a comprehensive approach for implementing change across your HE institution that meets the expectations of the individuals served, develops the full potential of all employees, frees up resources for reinvestment, and helps transform your college or university into a true learning organization" (Balzer, 2020)



Start Your LHE Journey Toward Operational Excellence

It doesn't matter where you start or how you start – just start!

Lean Higher Education:

Increasing the Value and Performance of University Processes 2nd Edition

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