## Using Data to Drive Process Improvement Initiatives In the Right Direction



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#### Disclaimers

I have no relevant financial or nonfinancial relationships to disclose, but wish to share the following:

- Portions of this presentation were gathered from a book chapter I wrote in <u>Outcomes in SLP</u> by Golper and Frattali.
- University of Wisconsin Madison is a member of NCCI.
- I am a Founding Partner of the 3C Digital Media Network, LLC and write a blog called *lean*Hcare.





# Do we really need data to drive change?



#### Which is Better?

Nearly 70% of change programs fail to achieve their goals. However, when we correctly utilize metrics and visual management systems, the opportunities to accelerate the behavioral change we want to enforce in our process improvement initiatives are endless.



Source: McKenzie & Company (2015)

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Safeway	09/13/2018	Groceries	-\$80.23	Education \$500	\$4,587 SPENT			
Starbucks	09/13/2018	Coffee Shops	-\$15.00	Business Expenses \$500				
Test	09/13/2018	Transfer	\$22,481.00	Other \$887				
BUDGET - SEPT	EMBER 2018	SPENDING OVER	TIME		INVESTMENT SUMMARY			
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Photos by Microsoft, Quicken, guardian.com, and Mike at Pexels.com



## Why do we need data?

- 1. Transparency, Trust, and Learning
- 2. Build Resiliency instead of Resistance
- 3. Navigate the Improvement Roadmap
- 4. Measure Progress and Celebrate Wins
- 5. Identify Opportunities to Achieve Success



## Objectives:

- Identify types of measurements used in process improvement that help to identify which opportunities to prioritize for improvement efforts.
- Determine if the improvement efforts are leading to progress towards the goals.
- Implement a visual management system for shared communication within and across the institutions.





#### **OBJECTIVE 1**

Types Of Measurements Used In Process Improvement That Help To Identify Which Opportunities To Prioritize For Improvement Efforts





#### What are we trying to accomplish?

#### How do we know that a change is an improvement?

# What change can we make that will result in an improvement?

Source: Langley, The Improvement Guide



Ignaz Semmelveis, 1840's

https://www.history.com/news/ hand-washing-diseaseinfection





#### James Lind's experiment with citrus fruit was one of the first reported clinical trials in medicine

#### James Lind, 1740's

#### https://www.bbc.com/news/uk-england-37320399



#### What are we trying to accomplish?







Study Your Opportunity

This is probably the most important step! Learn as much as you can! Take your time!



What are we trying to accomplish?

# How do we know that a change is an improvement?

What change can we make that will result in an improvement?

Source: Langley, The Improvement Guide



## **Types of Measures**

**Process** 

#### Outcome

- Wildly Important Goals
- Takes Time
- Lagging Measures
- Are we meeting our ultimate goal?



#### Small tests of change

- Leading Measures
- Are we doing the right things to get there?



#### Balance

- Ripple Effect
- Unintended
   Consequences
- Are the changes we are making causing any problems?



## Identifying Opportunities

Opportunities	Definition	Examples
Overproduction	An activity is not needed or implemented earlier than schedule	<ul> <li>Too many handouts</li> <li>Unbalanced teaching loads</li> <li>Course schedule is heavy on a specific day</li> </ul>
Over-processing	The category of waste that occurs in the design or implementation of higher education processes.	<ul> <li>Variability of courses</li> <li>Non-strategic alignment</li> <li>Ineffective activities</li> <li>Repeating unnecessary tasks</li> </ul>
Waiting	Delay of a process or source	<ul> <li>Waiting for an empty classroom from the previous user/multimedia system to begin lecturing</li> <li>Waiting for repairs/maintenance</li> <li>Awaiting permission or approval</li> <li>Looking for books, papers, documents, etc.</li> </ul>
Movement	Unnecessary movements	<ul> <li>Movement of lecturer/staff/students from classrooms or from one campus location to another</li> <li>Excessive movement of equipment</li> </ul>



## Identifying Opportunities

Opportunities	Definition	Examples
Transportation	Excessive movement material/ object.	<ul> <li>Routing administrative documents for approval</li> <li>Transporting lecture material (hard copies of material, books, etc.) between classes</li> </ul>
Inventory	Availability of supplies or goods needed.	<ul> <li>Storing records longer than needed</li> <li>Too much inventory</li> <li>Too many photocopies of agendas, notes, etc.</li> <li>Inefficient use of building spaces, storage</li> </ul>
Defect	Every aspect that is inappropriate according to standards/needs.	<ul><li>Correcting data errors</li><li>Schedule errors</li><li>Rework</li></ul>
People	Underutilized human resources skills/abilities due to inappropriate work allocation.	<ul> <li>Educators do not teach based on expertise</li> <li>No time for research or scientific activities</li> <li>Unnecessary bureaucracy</li> <li>Misalignment of goals</li> </ul>
Information	Waste that occurs when the available information does not support the university process.	<ul> <li>Information lost during delivery</li> <li>Irrelevant or inaccurate information</li> <li>Mistakes due to misunderstanding and communication problems</li> </ul>

Using *Outcome*, *Process*, and *Balance Measures* in process improvement helps to build a learning culture built on trust and transparency.

\*

Categorizing opportunities for improvement help to prioritize efforts that can be quantified and shared with others.



#### Printers

**Problem:** *Printer/Copier/Faxing management* for faculty, staff, and students is causing excessive *waste, confidentially* concerns, and negative *environmental* consequences.

**Aim:** Reduce the number of different types of printers/copiers/faxing machines and maintenance agreements from 1015 to 20 by the end of the academic year.



Photo by Andrea Piacquadio, Pexels.com

# How do we know if the change is an improvement?

#### Awesome job!



Photo by Jeff Miller / UW-Madison

# <image>

Photo by Photo by Bryce Richter / UW-Madison

#### **Measure it!**

**Outcome: Waste reduction** 

Process: Inventory reduction Ink cartilages Paper Servicing (i.e., repairs)

Balance: Timeliness of printing Duplication printing





#### **OBJECTIVE 2**

#### **Determine If The Improvement Efforts Are Leading To Progress Towards The Goals**



What are we trying to accomplish?

How do we know that a change is an improvement?

# What change can we make that will result in an improvement?

Source: Langley, The Improvement Guide



#### Measurement Plan

- How will you collect data?
  - Check sheet
  - Checklist
  - Questionnaire
  - Rating Scale
- When will you collect data?
  - Day of the week
  - Month of the year
  - Time of day
- Who will collect the data?
  - Manager, Team lead, Chair, Peer

- How much data?
  - One day, One person, One class
  - Historic data
  - Real time data
  - Sampling or All data
- Have you established validity of the data?
  - Addressed bias
  - Variations
- How will you share the data?
  - Visual management system





### Tell the story using your data

- Pareto Chart
  - Compass
- Run Chart
  - Guides you before you get on the interstate
- Control Chart
  - Cruising along



#### Printers





Office of Strategic Consulting UNIVERSITY OF WISCONSIN-MADISON

#### Printers

#### **Maintenance and Service**

- Over 3,000 printers in storage
- Service contracts on ~30% printers
- No printer/copier/fax SOP
- Different accounting systems
- Different functionality
- Minimal tracking of usage, servicing on noncontracted printers





#### **Printer Downtime**



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Photo by Andrea Piacquadio, Pexels.com



#### **OBJECTIVE 3**

Implement A Visual Management System For Shared Communication Within And Across The Institutions



#### Visual Controls & Visual Management System

#### Simple & Intuitive



#### Andon Alerts



404 error!





## Visual Management Board Example

- Should be simple, intuitive
- Easy to understand
- Focuses on the right problems

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## Visual Management Board Example

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LAST WEEK	Meeting with Th staff to discuss pilot plans. Pilot w/Bariatric	1 · Foilor up on Starton Nork · Scel draft to Scou Comar	- Obtain Storphan . - Updale metrics & targets for ANT - AJSI ong for Kriss	-Informa Transpl Tefer
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EST. END DATE	Dec. 2015	- Implecture 9/30	Dec Zais	
	8/31	8/28	e la i	Dec

- Establish the purpose of the board
- Visibility leads to actions and problem solving
- Enhances trust through transparency and communication



## Key Driver Diagram Example

- Goal
  - To test a hypothesis
  - To show a causal relationship
  - Living document used to accelerate learning in an improvement project
- Outcome
  - The What! What do we want to improve?
- Aim Statement
  - SMART
- Primary Driver
  - A set of factors or improvement areas that we believe must be addressed to achieve the desired outcome
  - The How's!
  - Consider "Structure, Processes/Workflow, and Operating Norms/Written and Unwritten Rules"

nsulting

- Statement/Noun
- Secondary Drivers
  - Specific areas where we plan changes or interventions
  - Secondary drivers will contribute to at least one or more primary driver
  - The How To's!
  - Action/Verbs

#### Key Driver Diagram - Printers

**Problem**: *Printer/Copier/Faxing management* for faculty, staff, and students is causing excessive *waste, confidentially* concerns, and negative *environmental* consequences.







# Once you know this....

...you need a roadmap to plot your course of action.

#### Aim/Goals

#### Measures / Small Tests of Change



Measures: This is how we know if the changes we are making are actually leading to improvement!



- Types of measures:
  - **Outcome measures** what is the ultimate result?
  - **Process measures** are we doing the right things to get there?
  - Balancing measures are the changes we are making to one part of the system causing problems in other parts of the system?



#### Visual Management System Example

	Printers	Student Recruitment	Employee Retention
Problem Worth Solving/ Background	Too many different styles of printers	Staffing college fairs	Turnover rate
Aim/Goal	↓ printers types/agreements	↑ # of college fairs attended	Retain high quality staff and faculty
Outcome Measure	# of printers from 1015 to 20	# of high quality, diverse students applying to college	Retain staff and faculty for 2 years from hire date
Process Measures	<ul> <li>Printer to person ratio 10 to 1</li> <li>Color printing</li> <li>Tracking system</li> </ul>	<ul> <li>Interest forms</li> <li>Student visits to booth</li> <li>Student sign-ups for more information</li> <li>Students apply to college</li> </ul>	<ul> <li>Onboarding</li> <li>Peer partner</li> <li>Startup package</li> </ul>
Balance Measures	Printing time Confidentiality printing	Time away from office	
Updates	500 printers	Attended 10 fairs	75% retention
Wins/Milestones	# of the 7 colleges have been updated	Two new college fairs	Peer partner program
Barriers	Status symbol if printer in office	Brochure missing key information	
Est. End Date	End of academic year	February, 2023	Ongoing



#### The Value of "Failed" Tests

"I did not fail one thousand times; I found one thousand ways how not to make a light bulb."

Thomas Edison







#### Resources

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# Thank you for being here today!



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