Welcome

Using Lean Six Sigma in your district.

C120–122

Learn how Olmsted Falls City used the Lean Six Sigma problem-solving methodology to improve business and the organizational performance of support staff employees.
Essential Questions

- How many districts would like to have additional financial resources in which to operate your district?

- How many feel it would be easy to pass a tax levy in your district in the current economic climate?

- How many feel the need to stretch existing financial resources in order to push off a future tax issue?
Essential Questions

• How many feel additional financial resources will soon be provided to you by “the State”?

• How many feel additional financial resources will soon be provided to you by “Washington DC”?

• How many feel that your district is likely at a “high water mark” in regard to its financial resources for the next several years?
Essential Questions

- What are we going to do in order to stretch our current financial resources for as long as possible?

- How do we find additional financial resources in order to fund much needed improvements within the school district?

- What process exists to help us become “more efficient” in our current operations?
Purpose of Presentation

- Introduce you to the concept of **Lean Six Sigma** and provide a brief overview of the methodology.

- Display examples of the deployment of **Lean Six Sigma** as a strategy to increase efficiencies / stretch financial resources for a public school.
What is Lean Six Sigma?

- A combination of two business concepts:
  - Lean
  - Six Sigma
What is Lean?

Based on teachings of Taiichi Ohno (Toyota).

- Specify value from the standpoint of the customer.

- Identify all the steps in the value stream (process); eliminating whenever possible those steps (waste) that do not create value.

- Re-examine the process again and again and again until a state of perfection is reached in which perfect value is created with no waste.
What is Lean?

- The core idea is to maximize customer value while minimizing waste.

- Simply, lean means creating more value for customers with fewer resources.
The Seven Wastes

1. Overproduction.
2. Wait Time.
3. Transportation waste.
4. Processing waste.
5. Motion/Movement waste.
6. Inventory waste.
7. Defects waste.
What is Lean?

- Eliminating unnecessary steps in a process.
- Maximize value (customer) while minimizing waste.
What is Six Sigma?

Based on teachings of Dr. W. E. Deming (1950s in Japan).

- Improvement can be accomplished project by project.
- Use of Statistical tools to improve processes.

Developed by Bill Smith at Motorola in 1980s

- Father of Six Sigma.
- DMAIC (Define / Measure / Analyze / Implement / Control).
What is Six Sigma?

• Business Definition
  ✓ A strategy to significantly reduce variability in every aspect of business.

• Technical Definition
  ✓ A statistical term signifying 3.4 defects per million opportunities.
What is Six Sigma?

• The implementation of a measurement-based strategy that focuses on process improvement and defect reduction.

• Reduce the number of defects.
## World Class Performance

<table>
<thead>
<tr>
<th></th>
<th>With 99 % Quality</th>
<th>With Six Sigma Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>US Post Office:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For every 300,000 letters delivered:</td>
<td>3,000 wrong deliveries</td>
<td>1 wrong delivery</td>
</tr>
<tr>
<td><strong>Aircraft Landings:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Out of every 500,000 landings:</td>
<td>5,000 crashes</td>
<td>Less than 2 crashes</td>
</tr>
</tbody>
</table>
What is Lean Six Sigma?

Lean → Reduce Waste

Six Sigma → Reduce Defects
Lean Six Sigma Project Methodology

**Define**
- Identify, evaluate and select projects for improvement.
- Set goals

**Measure**
- Collect data on size of the selected problem,
- Identify key customer requirements,

**Analyze**
- Analyze data, establish and confirm the “vital few” determinants of the performance.
- Validate hypothesis

**Improve**
- Improvement strategy
- Develop ideas to remove root causes
- Design and carry out experiments,
- Optimize the process.
- Final solutions

**Control**
- Establish standards to maintain process;
- Design the controls, implement and monitor.
- Evaluate financial impact of the project
Define

1. What are we trying to accomplish?
2. Why are we working on this project?
3. Who are the customers?
4. What output is important to the customer?
5. How does the current process flow?
6. What resources will be required to complete this project?
Define – Project Charter

- Project Charter Form
## Define – SIPOC Diagram

<table>
<thead>
<tr>
<th>Supplier(s)</th>
<th>Inputs</th>
<th>Process</th>
<th>Outputs</th>
<th>Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Husband</td>
<td>Teabag</td>
<td>Add water to Kettle</td>
<td>Cup of Tea</td>
<td>Wife</td>
</tr>
<tr>
<td>Supermarket</td>
<td>Kettle</td>
<td>Put kettle onto boil</td>
<td>Used teabag</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electricity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water</td>
<td>Add tea bag to Cup</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Milk</td>
<td>Add milk to cup</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cup</td>
<td>Pour boiling water into cup</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Remove teabag from cup &amp; serve</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Define – Flow Chart

Customer requests service

Resolved over phone?

YES → Problem fixed

NO → Visit Customer

Parts needed for repair?

NO → Problem fixed

YES → Clock Starts

Contact Tech Staff

Is part available internally?

NO → Tech Director orders part

YES → Confirm if part is in building’s stock

NO → Deliver part

YES → Receive part

Record results on survey sheet

Repair completed

Clock Stops

This step is done through a combination of Phone Calls, E-mails or Physical Checks.
Measure

1. What are the critical to quality characteristics (identify and define)?

2. What is the current performance of the process?

3. What are the relevant metrics?

4. Develop a Cause and effect matrix.
Measure – Critical to Quality

Olmsted Falls Technology Team - Supply Inventory Tracking

Voice of the Customer - Critical to Quality (CTQ)
Voice of the Business - Critical to Process (CTP)

<table>
<thead>
<tr>
<th>CTQs</th>
<th>Critical Customer Requirements</th>
<th>Customer Issues</th>
<th>Voice of Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce Technology Downtime</td>
<td>Quick, Reliable Repair</td>
<td>Availability of Technology</td>
<td>Please Get My Equipment Functioning ASAP</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Voice of the Business</th>
<th>Business Issues</th>
<th>Critical Business Requirements</th>
<th>CTPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do Not Add Cost</td>
<td>Responsibility to Taxpayers</td>
<td>Availability of Needed Supplies</td>
<td>Cost of Supplies/Value of Supply Inventory</td>
</tr>
</tbody>
</table>
Measure – Cause and Effect Diagram

©2005 - Envision Software
Through analysis, the team can determine the causes of the problem.

Through analysis, the team can determine how to eliminate the gap between existing performance and the desired level of performance.
Analyze – Pareto Chart
Improve

1. What improvement actions are necessary?
2. What are the obstacles to improvement?
3. How might the system “push back”? 
### Improve – FMEA

**FMEA (Failure Modes & Effects Analysis) for Sample Process or Product**

<table>
<thead>
<tr>
<th>Process Step</th>
<th>Input (X)</th>
<th>Potential Failure Modes</th>
<th>Potential Failure Effects</th>
<th>Severity</th>
<th>Occurrence</th>
<th>Current Controls</th>
<th>Detection Risk PN</th>
<th>Actions Recommended</th>
<th>Actions Taken</th>
<th>Severity</th>
<th>Occurrence</th>
<th>Detection Risk PN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add milk to cake mix</td>
<td>Milk</td>
<td>Wrong amount of milk</td>
<td>Cake too dry or too soggy</td>
<td>Small marks on measuring cup</td>
<td>5</td>
<td>10</td>
<td>None</td>
<td>6</td>
<td>Use large print measuring cups</td>
<td>JW</td>
<td>Replaced measuring cups</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Faded marks on measuring cup</td>
<td>5</td>
<td>Visual inspection</td>
<td>5</td>
<td>75</td>
<td>Replace faded measuring cups</td>
<td>JW</td>
<td>Replaced cups &amp; retrained inspectors</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Milk spilled</td>
<td>4</td>
<td>None</td>
<td>8</td>
<td>100</td>
<td>Train bakers</td>
<td>HH</td>
<td>(not complete)</td>
<td>5</td>
</tr>
<tr>
<td>Flour still in</td>
<td>Too little milk -</td>
<td>Employee carelessness</td>
<td>Employee carelessness</td>
<td>Training (apparently ineffective)</td>
<td>5</td>
<td>20</td>
<td>Change Standard Operating Procedure, and improve training program</td>
<td>HH</td>
<td>Changed SOP &amp; improved training program</td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>measuring cup</td>
<td>so cake too dry or too soggy</td>
<td></td>
<td></td>
<td>Lumps in cake</td>
<td>2</td>
<td>Employee carelessness</td>
<td>Training</td>
<td>9</td>
<td>100</td>
<td></td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

Notice that there can be several Failure Modes per Step, and several Effects and Causes per Failure Mode.

**User-defined Rating Scales**

Your team leaders can personalize these green-border text boxes with your own rating scales, and can define user-defined color thresholds on the DV worksheet.

**Rating Scale - Severity**
10 = Hazardous without warning
8 = Loss of primary function
5 = Loss of secondary function
2 = Minor defect
1 = Little or no effect

**Rating Scale - Occurrence**
10 = Almost inevitable
8 = Frequent failures
5 = Moderate failures
2 = Occasional failures
1 = Failure unlikely

**Rating Scale - Detection**
10 = Almost undetectable
8 = Very low chance of detection
5 = Low probability of detection
2 = Reasonable probability of detection
1 = Almost certain detection

Use both this FMEA and its related Control Plan to plan both: Preventative actions * Contingency plans if it happens.

RPN Risk Priority Number = Severity * Occurrence * Detection
Improve – Brainstorming

- Yellow hat versus Black hat thinking:

  - Yellow hat – is for optimism and a positive view of things. Emphasizes the logical benefits of the proposal.

  - Black hat – is for caution and critical judgment. Can stifle creativity.
### Improve – Prioritization Matrix

#### Project Prioritizer

<table>
<thead>
<tr>
<th>1) Project</th>
<th>2) Rating Categories</th>
<th>3) Total Project Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Importance to Customer</td>
<td>Cost to Implement</td>
</tr>
<tr>
<td>Foreign Language offerings</td>
<td>Rate 1 to 5 High = 5 Low = 1</td>
<td>Rate 1 to 5 High = 1 Low = 5</td>
</tr>
<tr>
<td>Teacher PD on technology</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Support system for struggling students</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Increase % of students going to college</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>All-Day Kindergarten</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Onsite PSEO classes</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Increase AP course offerings</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Senior Project</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Local Internships</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Programs for non-college bound students</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Preserving Art / PE / Music / Home Ec</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Introduction of Business / Computer Science classes at HS</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

Re-examine MS Life Skills and Tech Ed curriculum
Increase HS college counseling Services
Control

1. Has a mechanism been put in place to provide ongoing feedback and prevent backsliding?

2. Are significant characteristics being monitored?

3. Are appropriate preventive actions in place to ensure new process is being performed in a consistent fashion?

4. Are improvements, lessons learned, and best practices being shared in a systematic fashion?
Data Results - Amount of time to find a part

BEFORE = 56 Min Average
AFTER = 5 Min Average

Our data shows we saved 51 minutes/call.
On average, each Tech gets 2 calls/week requiring parts.

2 calls/wk * 51 minutes saved = 102 minutes saved/week
Each Tech saved 102 min or 1.7 hrs/week.

Total Technology Department Savings
Five Techs @ 1.7 hrs/week = 8.5 hours/week saved
With 36 weeks per year * 8.5 hrs = 306 hours saved/year

This time savings will be spent on upgrades, new projects and additional staff support.
LSS Implementation at OFCS

- School Food Service Operations
- School Transportation Operations
- School Custodial Maintenance Operations
- School IT Operations
Olmsted Falls City Schools Food Service Department Yellow Belt Training
Evolution of the Macaroni & Cheese Recipe

- Participants
  Carrie Bargholt
  Roberta Gonzalez
  Teresa Haun
  Cheryl Hennessey
  Denise Tabar
  Food Service Staff

Dates: Nov. 23, 2010 – March 24, 2011
### Voice of the Customer - Critical to Quality (CTQ)

#### Voice of the Business - Critical to Process (CTP)

**BUSINESS: Olmsted Falls School Food Service**

<table>
<thead>
<tr>
<th>Voice of the Business</th>
<th>Business Issues</th>
<th>Critical Business Requirements</th>
<th>CTPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make a Profit</td>
<td>labor time &amp; total time to prepare</td>
<td>cost vs. output</td>
<td>Prep time</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CTQs</th>
<th>Critical Customer Requirements</th>
<th>Customer Issues</th>
<th>Voice of Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scorecard Results</td>
<td>Tasty, hot product</td>
<td>flavor, appearance, texture, temperature</td>
<td>Good product for the cost</td>
</tr>
<tr>
<td>Type of Waste</td>
<td>Observations</td>
<td>Means to Eliminate Source of Waste or Obstacle to Eliminating Waste</td>
<td>Savings / Benefit from Eliminating the Waste</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Overproduction</td>
<td>Not reading and understanding the recipe.</td>
<td>Eliminates over or under production</td>
<td>Time and ability to produce.</td>
</tr>
<tr>
<td>Inventory</td>
<td>Not letting manager know you need supplies (milk gallons and macaroni noodles).</td>
<td>Communicate with the manager.</td>
<td>Time and money.</td>
</tr>
<tr>
<td>Transportation</td>
<td>Lifting pans over her head to the top oven when the bottom one was not being utilized.</td>
<td>Heavy pans should always be used in the bottom ovens when possible.</td>
<td>Eliminates possible serious injury.</td>
</tr>
<tr>
<td>Waiting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excess motion</td>
<td>Not gathering all of the ingredients and supplies at one time. Walking back and forth to get supplies.</td>
<td>Gather supplies on carts.</td>
<td>Time and quality of product.</td>
</tr>
<tr>
<td>Non value-added processing</td>
<td>Walking back and forth. Covered macaroni and cheese when not necessary to do in a combi oven. Opened 8 oz cartons of milk instead of having gallons of milk.</td>
<td>Pay attention and follow operating instructions of equipment. Pre-plan supplies needed.</td>
<td>Time and quality of product.</td>
</tr>
<tr>
<td>Correction</td>
<td>Training / Asking questions.</td>
<td>Consistency</td>
<td>Quality of time and products.</td>
</tr>
<tr>
<td>Under-used intellectual assets</td>
<td>Not using knowledge learned during in-service day, staff meetings, and classes. Not asking questions.</td>
<td>Paying attention in meetings and applying what is being taught.</td>
<td>Time, quality of product.</td>
</tr>
</tbody>
</table>
First Scorecard Survey Results

51 out of 182 perfect scores
Measure Phase Summary

- Wasted motion in preparation time
- Recipes not standardized throughout the district
- Different equipment required different process
- Preparers added or deleted parts of recipe over time
Actions To Take

- Standardize recipe
- Be sure all tools and equipment needed are available
- Develop checklist for the production process
- Train staff
- Take measurements a second time and compare results
Survey Results Macaroni & Cheese 2nd collection

81 out of 215 perfect scores
Control Tools and Leverage

- Production Record with time column added
- Checklist
- Revised Standardized Recipe
- Training

Leveraging for future time savings:
- new quality improvement projects
- increase labor intensive recipes to provide
- higher quality nutrition to customers
- use this method to analyze current scratch recipes
Additional Benefits and ROI

- Less pans to clean
- Easier cleaning of pans (No Sticking)
- Easier and faster serving to students (not sticking to serving utensils)
- Better quality end product
- Less use of employee time to maintain quality during hold time
- Training for all Food Service staff on project
- Project hopper for each building kitchen
- Additional average of 71 minutes saved to be used in continuation of quality improvement
- Use of process to evaluate current scratch recipes
- Improved quality to customers
- $71 \text{ min/bldg} = 284 \text{ min} \times 9 = 2556 \text{ min/year} = 42.6 \text{ hrs} \times 15.44/\text{hr} = \$ 657.74$
This sums it all up!
LSS Implementation at OFCS

- School Food Service Operations
- School Transportation Operations
- School Custodial Maintenance Operations
- School IT Operations
Transportation Team

*Lean Six Sigma Project:*

**AM/PM KG CLASS RE-DISTRIBUTION**
DEFINE: Challenge

➢ Our project subject was developed due to concerns over an imbalance of student numbers in our AM and PM Kindergarten classes.

➢ Through research, it was found that following the registration process in April 2010 and a submittal to the Early Childhood Center in May 2010 with a tentative class assignment for students, transportation had developed an AM class roster of approximately 102 and a PM roster of approximately 103.
## DEFINE: CTQ/CTP

**Voice of the Customer - Critical to Quality (CTQ)**

**Voice of the Business - Critical to Process (CTP)**

<table>
<thead>
<tr>
<th>Voice of the Business</th>
<th>Business Issues</th>
<th>Critical Business Requirements</th>
<th>CTPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balanced KG</td>
<td>Class sizes (21 +/-2)</td>
<td>Lower class sizes for maximum educational benefit</td>
<td>More conducive learning environment for students.</td>
</tr>
<tr>
<td>Balanced KG class sizes for teachers effectiveness</td>
<td>Better teaching environment</td>
<td>Class sizes (21 +/- 2)</td>
<td>Balanced AM &amp; PM class sizes</td>
</tr>
</tbody>
</table>

**Voice of Customer Requirements**

- Balanced KG class sizes

**Critical Customer Requirements**

- Class sizes (21 +/-2)

**Customer Issues**

- Lower class sizes for maximum educational benefit

**Voice of Customer**

- More conducive learning environment for students.
DEFINE: Team Members

- Tim Atkinson, Director of Business Affairs
- Jan Holecko, Transportation Coordinator
- Greg Surtman, Director of Business Development (Tri-C)
- Dr. Jim Lloyd, ECC Principal
- Loretta McClelland, ECC Secretary
- Dr. Todd Hoadley, Superintendent
- Kathleen Fenderbosch, KG Bus Driver
## DEFINE: MUDA Walk Form

<table>
<thead>
<tr>
<th>Type of Waste</th>
<th>Observations</th>
<th>Means to Eliminate Source of Waste or Obstacle to Eliminating Waste</th>
<th>Savings / Benefit from Eliminating the Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overproduction</td>
<td>Students that are double registered at O.F. and a non-public school.</td>
<td>Create registration deadline.</td>
<td>Eliminate phone calls to parents and more accurate data.</td>
</tr>
<tr>
<td>Inventory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waiting</td>
<td>Waiting for parents to register students.</td>
<td>Create registration deadline.</td>
<td>More accurate data to balance classes.</td>
</tr>
<tr>
<td>Excess motion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non value-added processing</td>
<td>Updating/revising lists &amp; routes</td>
<td>Better communication &amp; registration deadline for more thorough list to start.</td>
<td>Reduce number of revisions.</td>
</tr>
<tr>
<td>Correction</td>
<td>Duplicate registrations.</td>
<td>Better communication between school, parent &amp; transportation.</td>
<td>Time to correct mistake.</td>
</tr>
<tr>
<td>Under-used intellectual assets</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DEFINE: Process Map

1. **Pre-registered students.**
   - Transportation assigns students to AM/PM based on street lists.
   - Adjust streets to equal class sizes AM/PM
   - Review class sizes.
   - AM/PM even?
     - YES: STOP
     - NO: Make adjustments.

2. **Non Pre-registered students.**
   - Student has IEP.
   - ECC assigns student to AM or PM session.
   - Review class sizes.
   - AM/PM even?
     - YES: STOP
     - NO: Make adjustments.
## Analyze: FMEA

### Process/Product Failure Modes and Effects Analysis (FMEA)

<table>
<thead>
<tr>
<th>Process or Product Name: KG Class Assignment</th>
<th>Prepared by: Ticketing Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsible:</td>
<td>FMEA Date (Orig) (Rev)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Process Step/Input</th>
<th>Potential Failure Mode</th>
<th>Potential Failure Effects</th>
<th>Potential Causes</th>
<th>Current Controls</th>
<th>RPN</th>
<th>Actions Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>Double entry at OF and non-public school</td>
<td>Extra phone calls, route changes</td>
<td>Parent didn't decide where child should go or used one school as a backup plan</td>
<td>Cross check lists and try to get an answer from parent early.</td>
<td>315</td>
<td>Adding a KG registration deadline</td>
</tr>
<tr>
<td>Registration</td>
<td>Summer address change</td>
<td>Could change class sizes and routes.</td>
<td>Failure of parent OR school to notify transportation of change.</td>
<td>Inform parents to notify transportation of potential moves.</td>
<td>80</td>
<td>Communication to parents to notify transportation.</td>
</tr>
<tr>
<td>Registration</td>
<td>School forgot to notify transportation of new student</td>
<td>Last minute route changes, no postcard for student</td>
<td>Failure at school office</td>
<td>Communication with school frequently.</td>
<td>40</td>
<td>School registration checklist.</td>
</tr>
<tr>
<td>Registration</td>
<td>Late entries/registration</td>
<td>Last minute route changes, no postcard for student, added phone calls</td>
<td>Carelessness of parent, newly moved into district</td>
<td>None</td>
<td>200</td>
<td>Adding a KG registration deadline</td>
</tr>
<tr>
<td>Registration</td>
<td>Student withdrawn/doesn't enter</td>
<td>Route changes</td>
<td>Parent moved out of district or decided not to send the child to KG this year.</td>
<td>Screening process.</td>
<td>12</td>
<td>Adding a KG registration deadline</td>
</tr>
</tbody>
</table>
There were 49 students added to AM KG from April ‘10 thru March ‘11.

Of the 49 students, 36 were new (29 over summer), 8 were due to street assignment changes and 5 were IEP placements.

[49 added – 15 deleted (previous slide) = net gain of 34 to AM class]
ANALYZE

SUMMARY

- A large influx of new students occurred over the summer months
- Changes in street assignments to adjust the class sizes were made too early
- Class placements due to IEP’s had a minimal effect
Pre-registered students by June 15th

Transportation assigns students to AM/PM based on street lists.

Adjust streets to equal class sizes AM/PM

Review class sizes.

AM/PM even?

NO

Make adjustments in July.

YES

STOP.

Non pre-registered students.

Student has IEP.

ECC assigns student to AM or PM session.

Daily contact with Loretta/ECC

Loretta will communicate student enrollment changes daily (or as needed). After July, ECC will place students in am/pm classes to maintain a +/- 2 students balance.
FUTURE IMPROVEMENTS

• Add Pre-registration deadline of June 15th to reduce number of late registrations

• Reinstate old street boundaries and wait until July to make any adjustments with streets

• Monitor Before/After KG daycare enrollment and use as a tool to adjust class sizes as needed

• Daily communication on student enrollment changes with ECC/Loretta

• Get feedback related to street assignments/routes from KG driver
Benefits of Lean Six Sigma

- Generates sustained success
- Sets performance goal for everyone
- Enhances value for customers;
- Accelerates rate of improvement;
- Promotes learning across boundaries;
- Executes strategic change
# Six Sigma Results

<table>
<thead>
<tr>
<th>Company</th>
<th>Annual Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Electric</td>
<td>$2.0+ billion</td>
</tr>
<tr>
<td>JP Morgan Chase</td>
<td>*$1.5 billion</td>
</tr>
<tr>
<td></td>
<td>(*since inception in 1998)</td>
</tr>
<tr>
<td>Motorola</td>
<td>$16 billion</td>
</tr>
<tr>
<td></td>
<td>(*since inception in 1980s)</td>
</tr>
<tr>
<td>Johnson &amp; Johnson</td>
<td>$500 million</td>
</tr>
<tr>
<td>Honeywell</td>
<td>$600 million</td>
</tr>
</tbody>
</table>
Partnership

OLMSTED FALLS SCHOOLS

Cuyahoga Community College

CORPORATE COLLEGE®
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