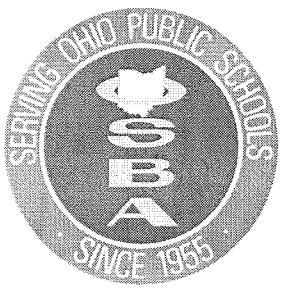


Ohio School Boards Association
Capital Conference and Trade Show

November 13 – 16, 2011

Greater Columbus Convention Center
Columbus, Ohio

Using Lean Six Sigma in your district

Administration
Monday, November 14, 2011
9:00 a.m.
C 120—122

Denise Tabar, food service director, Olmsted Falls City
Todd Hoadley, superintendent, Olmsted Falls City

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

OSBA Mission

OSBA leads the way to educational excellence by serving Ohio's public school board members and the diverse districts they represent through superior service and creative solutions.

Ohio School Boards Association

8050 North High Street, Suite 100
Columbus OH 43235-6481
(614) 540-4000 fax (614) 540-4100
www.osba-ohio.org

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.

1

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?

2

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?

3

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?

4

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.

5

What is Lean Six Sigma?

- A combination of two business concepts:
  - Lean
  - Six Sigma

6

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.

7

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.

8

The Seven Wastes

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

9

What is Lean ?

- Eliminating unnecessary steps in a process.
- Maximize value (customer) while minimizing waste.

10

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).

11

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.

12

What is Six Sigma ?

- The implementation of a measurement-based strategy that focuses on process improvement and defect reduction.
- Reduce the number of defects.

13

World Class Performance

	With 99 % Quality	With Six Sigma Quality
US Post Office: For every 300,000 letters delivered:	3,000 wrong deliveries	1 wrong delivery
Aircraft Landings: Out of every 500,000 landings:	5,000 crashes	Less than 2 crashes

14

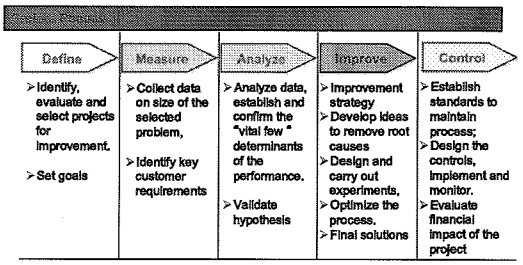
What is Lean Six Sigma?

Lean ⇒ Reduce Waste

Six Sigma ⇒ Reduce Defects

15

Lean Six Sigma Project Methodology



16

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?

17

Define – Project Charter

- Project Charter Form

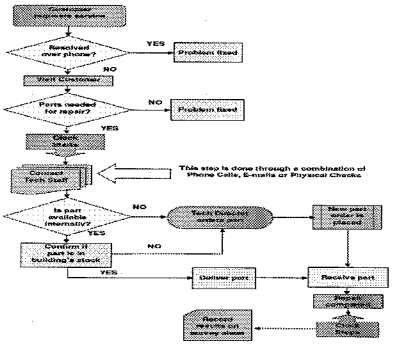
18

Define – SIPOC Diagram

Supplier(s)	Inputs	Process	Outputs	Customer
Husband	Teabag	Add water to Kettle	Cup of Tea	Wife
Supermarket	Kettle	Put kettle onto boil	Used teabag	
	Electricity	Add tea bag to Cup		
	Water	Add milk to cup		
	Milk	Pour boiling water into cup		
	Cup	Remove teabag from cup & serve		

19

Define – Flow Chart



20

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.

21

Measure – Critical to Quality

Olmsted Falls Technology Team - Supply Inventory Tracking

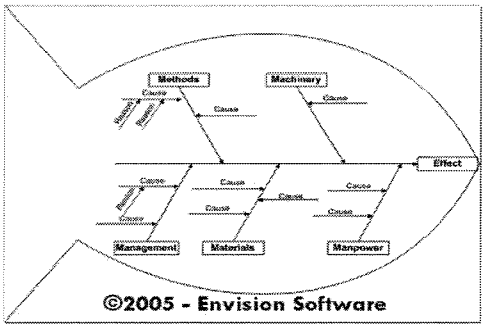
Voice of the Customer - Critical to Quality (CTQ)
Voice of the Business - Critical to Process (CTP)

	CTQs	Critical Customer Requirements	Customer Issues	Voice of Customer
	Reduce Technology Downtime	Quick, Reliable Repair	Availability of Technology	Please Get My Equipment Functioning ASAP!

Voice of the Business	Business Issues	Critical Business Requirements	CTPs
Do Not Add Cost	Responsibility to Taxpayers	Availability of Needed Supplies	Cost of Supplies/Value of Supply Inventory

22

Measure – Cause and Effect Diagram



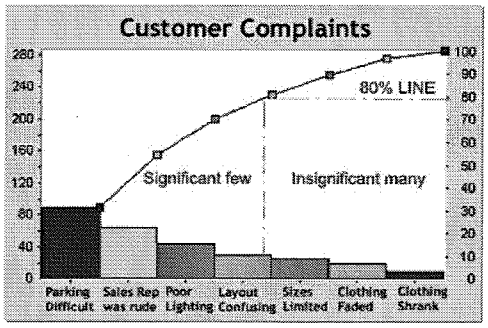
23

Analyze

- 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.

24

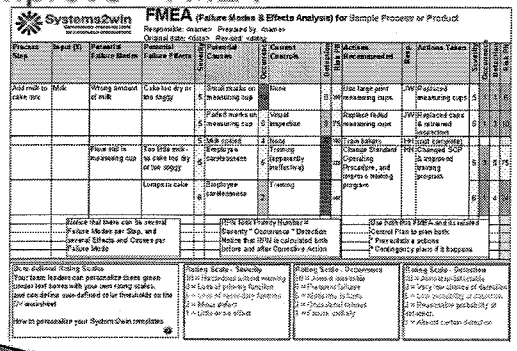
Analyze - Pareto Chart



Improve

1. What improvement actions are necessary?
2. What are the obstacles to improvement?
3. How might the system "push back"?

Improve - FMEA

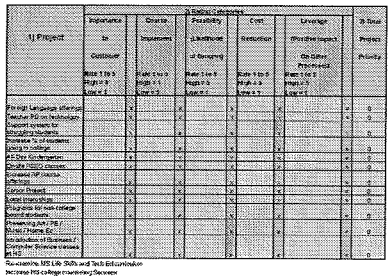


Improve - Brainstorming


- 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



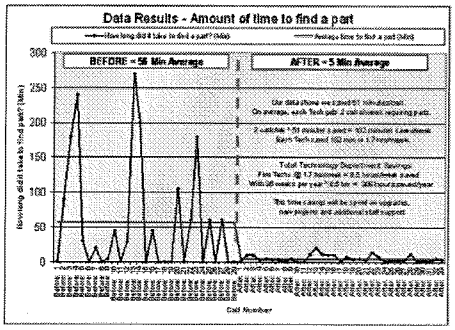
29

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 preformed in a consistent fashion?
4. Are improvements, lessons learned, and best practices being shared in a systematic fashion?

30

Control



31

LSS Implementation at OFCS

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

32

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)

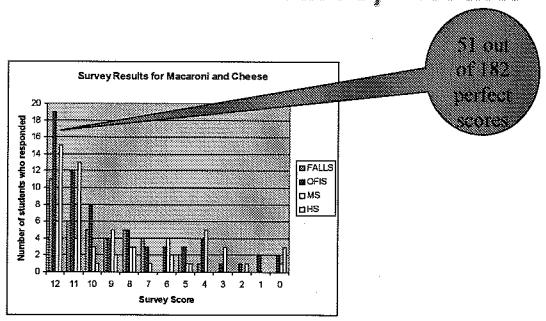
BUSINESS: Olmsted Falls School Food Service

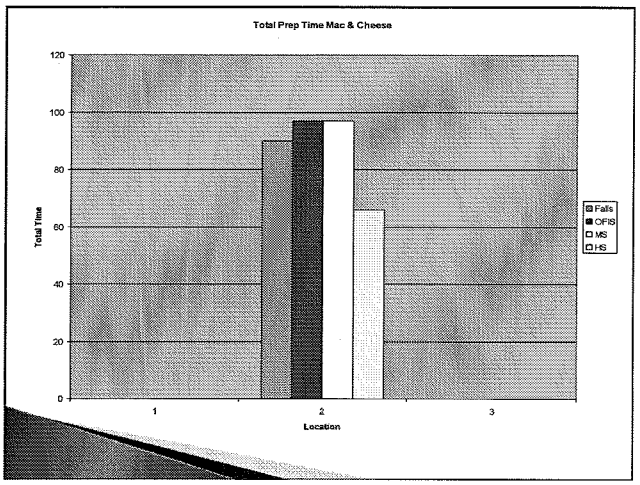
	CTQs	Critical Customer Requirements	Customer Issues	Voice of Customer
	Scorecard Results	Tasty, hot product	flavor, appearance,texture,temperature	Good product for the cost

Voice of the Business	Business Issues	Critical Business Requirements	CTPs
Make a Profit	labor time & total time to prepare	cost vs. output	Prep time

Type of Waste	Observations	Means to Eliminate Source of Waste or Obstacle to Eliminating Waste	Savings / Benefit from Eliminating the Waste
Overproduction	Not reading and understanding the recipe.	Eliminates over or under production	Time and ability to produce.
Inventory	Not letting manager know you need supplies (milk gallons and macaroni noodles).	Communicate with the manager.	Time and money.
Transportation	Lifting pans over her head to the top oven when the bottom one was not being utilized.	Heavy pans should always be used in the bottom ovens when possible.	Eliminates possible serious injury.
Waiting			
Excess motion	Not gathering all of the ingredients and supplies at one time. Walking back and forth to get supplies.	Gather supplies on carts.	Time and quality of product.
Non value-added processing	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.	Pay attention and follow operating instructions of equipment. Pre-plan supplies needed.	Time and quality of product.
Correction	Training / Asking questions.	Consistency	Quality of time and products.
Under-used intellectual assets	Not using knowledge learned during in-service day, staff meetings, and classes. Not asking questions.	Paying attention in meetings and applying what is being taught.	Time, quality of product.

First Scorecard Survey Results



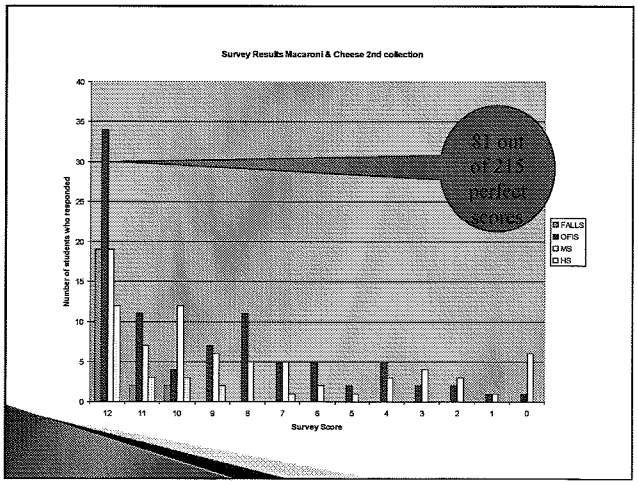


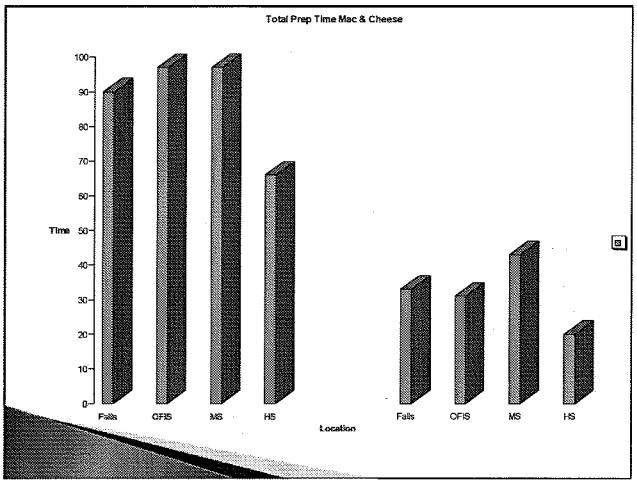
Measure Phase Summary

- 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



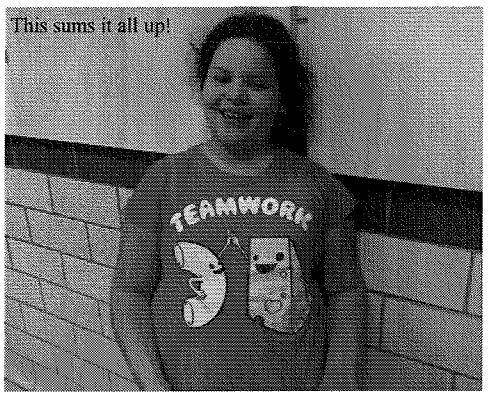


Control Tools and Leverage

- 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 min/bldg=284minx9=2556min/year=42.6hrsx$15.44/hr=$657.74



LSS Implementation at OFCS

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

45

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)					
			CTQs	Critical Customer Requirements	Customer Issues	Voice of Customer
			Balanced KG class sizes	Class sizes (21 +/-2)	Lower class sizes for maximum educational benefit	More conducive learning environment for students.
Voice of the Business	Business Issues	Critical Business Requirements	CTPs			
Don't increase cost of transportation	Stay within budget	Don't increase cost of transportation	Cost remains the same			
Balanced KG class sizes for teachers effectiveness	Better teaching environment	Class sizes (21 +/- 2)	Balanced AM & PM class sizes			

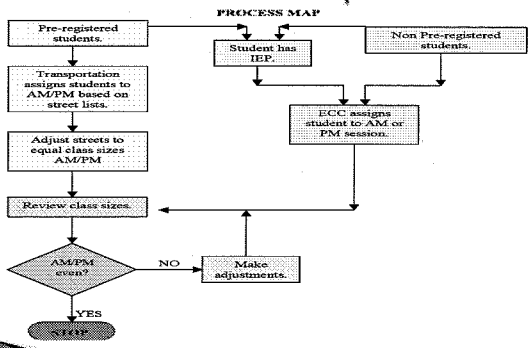
DEFINE: Team Members

- *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

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

DEFINE: Process Map



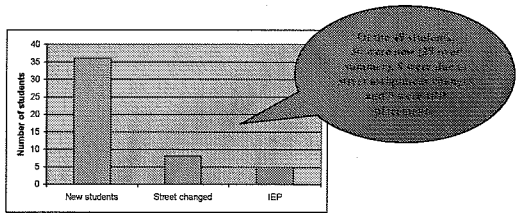
ANALYZE: FMEA

Process/Product Failure Modes and Effects Analysis (FMEA)

Process or Product Name:	KG Class Assignment			Prepared by: Ticketing Team		Page 1 of 1
Responsible:				FMEA Date (Orig) _____ (Rev) _____		
Process Step/Input	Potential Failure Mode	Potential Failure Effects	Potential Causes	Current Controls	RPN	Actions Recommended
Registration	Double entry at OF and non-public school	Extra phone calls, route changes	Parent didn't decide which child should go or used one school as a backup plan	Cross check lists and try to get an answer from parent early.	315	Adding a KG registration deadline
Registration	Summer address change	Could change class sizes and routes.	Failure of parent OR school to notify transportation of change.	Inform parents to notify transportation of potential moves.	80	Communication to parents to notify transportation.
Registration	School forgot to notify transportation of new student	Last minute route changes, no postcard for student	Failure at school office	Communication with school frequently.	40	School registration checklist.
Registration	Late entries/registration	Last minute route changes, no postcard for student, added phone calls	Carelessness of parent, newly moved into district	None	200	Adding a KG registration deadline
Registration	Student withdrawn/doesn't enter	Route changes	Parent moves out of district or decided not to send the child to KG this year.	Screening process.	12	Adding a KG registration deadline

ANALYZE

There were 49 students added to AM KG from April '10 thru March '11.



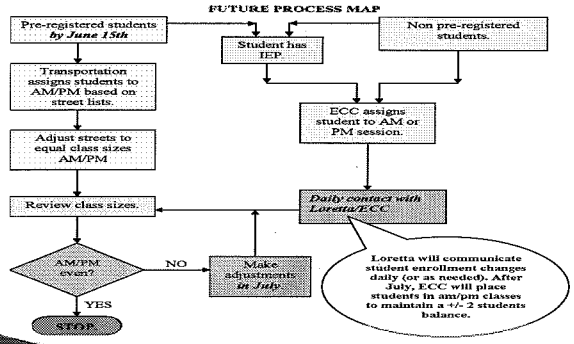
[49 added – 15 deleted (previous slide) = net gain of 34 to AM class]

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

IMPROVE: Future Process Map



IMPROVE

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

57

Six Sigma Results

Company	Annual Savings
General Electric	$2.0+ billion
JP Morgan Chase	*$1.5 billion (*since inception in 1998)
Motorola	$ 16 billion (*since inception in 1980s)
Johnson & Johnson	$500 million
Honeywell	$600 million

58

Partnership

EXCELLENCE · EDUCATION · EFFICIENCY
OLMSTED FALLS Schools

Cuyahoga Community College

CORPORATE COLLEGE®
A Division of Cuyahoga Community College

59

Questions

60


Contact Information:
Olmsted Falls City Schools
Dr. Todd Hoadley, Superintendent
(440) 427-6000 thoadley@ofcs.net
Denise Tabar, Director of Food Services
(440) 427-6440 dtabar@ofcs.net
Tim Atkinson, Director of Business Affairs
(440) 427-6000 tatkinson@ofcs.net
Tri-C Corporate College
Greg Surtman, Director of Business Development
(216) 987-5855 greg.surtman@tri-c.edu
61