Lean and Lean Six Sigma
In Education

Texas Regional Educational Service Center 1

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Steven C. Pereus
President, Enlīt, LLC

www.enlitllc.com
scpereus@enlit10.com
419-392-1775
Efficiency Management and Financial Improvement

• Efficiency improvement is on everyone’s agenda

• Efficiency is not a default setting

• Sources of inefficiency are vast.

• Each operational area has its own sources of waste efficiency and quality improvement opportunities.

• Opportunity for improvement $100 - >$500/student

• Opportunity to work smarter not harder
Why Does Performance Matter?
Impacts Mission, People, Students

Value of High Performance

Ex: 500,000 sq. ft. Valued Added - $0.5 mm/year
Best Management Practice
Systematic Use of Data to Improve

**Good to Great and the Social Sectors, Jim Collins**
“What matters is settling upon a consistent and intelligent method of assessing your output results, and then tracking your trajectory with rigor. What do you mean by great performance? Have you established a baseline? Are you improving? If not, why not? How can you improve even faster towards your audacious goals?”

**Lean Six Sigma, Michael L. George; Juran, Quality Management**
• Improvement potential of any process is as much as 35%

**Barriers**
• Technology
• Human Resources
• Time
Traditional Approach to Efficiency Improvement

- Compare spending to other districts
- Reduce staff and spending
- Continue to do the same or more volume of work
- Impact – higher work load, fewer people, lower quality, fewer services, inefficiency, and burn out
Lean is a Philosophy, System and Tools

- Continuous improvement
- Customer focus
- Creating visibility and understanding with data
- Process for improvement
- Common set of tools and improvement strategies
- Employee engagement
Lean and Six Sigma

**Lean**
- Remove waste
- Increase speed
- Remove non-value added process steps
- Fix process disconnect
- Focuses on customer

**Six Sigma**
- Reduces variation
- Improves quality
- Optimize process
- Focuses on customer

**Speed** + **Accuracy**
Impact of Lean Thinking in Education

Absenteism (Days per Year)

- Year 1: 14500
- Year 2: 12000
- Year 3: 11000

Lost Time Injuries

- Year 1: 140
- Year 2: 120
- Year 3: 100
- Year 4: 70
- Year 5: 50
- Year 6: 30
- Year 7: 20

Grievances

- Year 1: 90
- Year 2: 60
- Year 3: 40

Cost Savings $ mm

- Year 1: $ 3 mm
- Year 2: $ 5 mm
- Year 3: $ 8 mm
- Year 4: $ 10 mm
- Year 5: $ 12 mm
- Year 6: $ 14 mm
- Year 7: $ 16 mm

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From Firefighting to Innovation

1. Reacting
2. Improvement Orientation
3. Systematic Evaluation and Improvement
4. Learning and Strategic Improvement
5. Organizational Analysis and Innovation
Lean Approach in Education

Goal: Build a Lean Organization - Reduce unnecessary costs, reduce waste and improve quality

- Use consistent process to measure, assess, improve
- Define issues and opportunities
- Measure internal performance of each area
- Analyze data
- Benchmark and compare
- Determine value of improvement
- Plan/Improve
- Monitor/control
Lean Approach in Education
Example Problems

• Reduce operating costs
• Improve operations efficiency
• Improve productivity
• Reduce supply use
• Reduce time required to complete a process
• Reduce errors in a process
• Reduce cost of ownership
• Meet or exceed customer requirements
• Instructional process
• Optimize use of assets
• Reduce equipment requirements
8 Types of Waste in Education

1. Over-production
2. Waiting
3. Transportation
4. Over-processing
5. Inventory
6. Rework
7. Motion
8. Intellect

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**Productivity - Three Elements of Work**

### Elements of work

- **Waste**
  - *Work or time that does not add any value to a product*

- **Value Added Activity**
  - *Work or time that directly increases the value of the product in the eyes of the customer*

- **Incidental Activity**
  - *Work or time that does not directly add customer value, but which is currently necessary to maintain operations*

### Objective

*The objective is to maximise the proportion of value added activity by eliminating waste and incidental activity.*
Facilities – Custodial Operations

Value Added Activities
• Actual cleaning time
• Application of appropriate floor wax amounts
• Floor waxing and burnishing

Waste
• Wasted motion in cleaning process
• Excess use of chemicals and supplies
• Lost time due to injuries
• Moving furniture to clean

Incidental
• Ordering supplies
What and How to Measure?

Framework for Systematic Use of Measures Analytics to Improve Efficiency and Quality

- Vision
- Mission
- Strategy
- Goals

Student Achievement and Outcomes

Service Level

Quality

Efficiency

Productivity

Spending

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The Right Data, Measures, and Analytics Increase Visibility into Waste and Efficiency
Measurement Basics

- Efficiency – Unit costs
  - Waste – issue specific
- Productivity – workload/FTE or output/FTE
- Quality – Academic, other
- Service Level – Drivers of the need for a service
- Spending
  - Spending per student
  - ROI – Cost and impact of a program
  - Strategic alignment
# Depth and Scope of Improvement is Based on Type of Measures and Analytics Used

<table>
<thead>
<tr>
<th>Level and Scope of Data Use</th>
<th>Knowledge</th>
<th>Tools</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level I Measures and Analytics</td>
<td>Spending</td>
<td>Budget/State Benchmarks</td>
<td>No knowledge of performance</td>
</tr>
<tr>
<td>Level II Measures and Analytics</td>
<td>Unit Cost of Services (Efficiency)</td>
<td>State Data/District 50 Key Drivers Enlit Model Discovery Process</td>
<td>Awareness of performance</td>
</tr>
<tr>
<td>Level III Measures and Analytics</td>
<td>Holistic Understanding of Performance Peers</td>
<td>Enlit Model 1 year District Data Proprietary Benchmarks</td>
<td>Understand Performance Diagnose Performance Improve Performance Reduce Waste</td>
</tr>
<tr>
<td>Level IV Measures and Analytics</td>
<td>How did we get here? Where are we? Where are we headed?</td>
<td>Enlit Model 3 years district data Proprietary Benchmarks Goal Setting Modeling</td>
<td>Understand Trends Control Trends See Relationships Understand Performance Diagnose Performance Improve Performance</td>
</tr>
</tbody>
</table>

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DIMAC Improvement Process for Analyzing and Using Data to Improve

1. **Define Issues**
   - Performance Model

2. **Measure**
   - What is performance?
   - **District Performance Management**

3. **Analyze**
   - Where are opportunities?
   - What is possible (benchmarks)

4. **Improve**
   - What should change?

5. **Control**
   - Sustain path

**Diagnostic System**

**Improve, Control System**
Lean Measurement

- Start with: issues/opportunities in a department
- Build measures that define real world
- Key Tools:
  - Performance measurement methods
  - Eight sources of waste
  - Root cause analysis
  - Cause - Effect
  - SIPOC
  - Trend analysis
• Most work involves one or more processes.
• Processes often not designed by evolve
• Often a source of cost and time savings.
Lean Tools – Root Cause Analysis

Fishbone Diagram Example

- People
  - Poor training
  - People don’t care
  - No training budget
- Methods
  - Don’t charge nightly
- Machines
  - Old battery
- Materials
- Measurements
  - No power gauge
- Environment
  - Middle of winter

Employee laptops run out of power
Lean Analytics and Root Cause Analysis Reveal Opportunities that Traditional Methods Miss

Deep lean Analytics
- Spend
- Cost,
- Efficiency
- Productivity
- Service level
- Quality
- Assets
- Student
- Process

Root Cause Analysis

Spending Analytics
- $/student
- %
- $

Facilities Budget

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Measure Critical Numbers that Can be Used by Staff

- **Sporadic Spike**
- **Original zone of efficiency and effectiveness**
- **Chronic waste, inefficiency (Opportunity for Improvement)**
- **New Zone of Control**
- **Measure, Assess, Improve**
Lean Tools – Pareto Analysis – Select Critical Measures and Data

Simple example of a Pareto chart using hypothetical data showing the relative frequency of reasons for arriving late at work.
Applying the DMAIC Process
District, Division, Department, Process

- Define the Issues – common across districts. Use experience and methods to define range of issues
- Measure – Develop measures to analyze operations.
- Analyze – Analyze data to pinpoint root causes
- Improve – Best practices; Lean; good business
- Control – Monitor with measures
Lean Process
Links Data Analysis – Root Causes - Solutions

Define
- Balanced scorecard perspectives
- Define possible issues
- Clarify issues
- Operations
- Central Services
- Education
- Academic/Student Vendor

Measure
- Match Measures to Issues
- Integrate root cause analysis

Analyze
- Compare to standards; what's possible; id gaps
- ID potential solutions to address root causes
- Prioritize
- Implement

Improve
- Measure to assure actions have met objectives
- Assure sustainable Continuously improve

Control
- Ongoing measurement for follow up and continuous improvement

Objectives
Objectives Drive Measures
- Measures Highlight Priorities
- Analysis provides a list of root causes to address
- Solutions turned into a plan

Activities
- What do we need to know about efficiency and performance
- Process map Performance metrics Current situation metrics
- Root causes analysis Fishbone Update charter
- Decisions Actions Goals Brain storm solutions Prioritize against criteria Document Recommendations Business case
- Measure Compare to objectives Continue measurement

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Lean Analytics Diagnostics

Diagnose - identify root causes, opportunities, value

Define Issues
• Experience, models, client input

Analytical Tools Synthesize Data
▪ Financial analysis
▪ Efficiency analysis
▪ Staff workloads and productivity
▪ Service drivers
▪ Waste analysis
▪ Quality results
▪ Assets
▪ More
Lean Improvement

Develop Plan to Improve

- Lean - start with the simplest and easiest solutions
  - Simple decisions
  - Eliminate waste
  - Control supply use
  - Manage inventories
  - Manage suppliers and vendors
  - 5S – visual management
  - Standard work procedures
  - Eliminate non value added activities
  - Streamline
  - Establish standards
  - Optimize asset use
  - Engagement – involve employees
Applications

Process
• Curriculum supplies ordering process

Department Assessment (i.e.)
• Facilities ($100/student +)
  • Custodial

Operations Efficiency Assessment
• All operating areas
• Typically identify $140 - $350/student

District Wide Performance Audit/Review
• Education, central and operations
• Discover in excess of $500/student
Lean Applications, Case Histories and Discussion

Facilities

• Common issues/problems/opportunities
• Measurement
• Lean Solutions/Improvement Strategies
Lean Applications, Case Histories and Discussion

Transportation

- Common issues/problems
- Measurement
- Lean Solutions/Improvement Strategies
Lean Applications, Case Histories and Discussion

Food Service

• Common issues/problems/opportunities

• Measurement

• Lean Solutions/Improvement Strategies
Lean Applications, Case Histories and Discussion

Technology

- Common issues/problems/opportunities
- Measurement
- Lean Solutions/Improvement Strategies
Lean Applications, Case Histories and Discussion

Goal - $3 mm District Wide Savings

• Common issues/problems/opportunities
  Education
  Central Services
  Operations

• Measures

• Lean Solutions/Improvement Strategies
Lean Applications, Case Histories and Discussion

Correlation between direct instruction spending and student achievement

• Discussion

• Approach to problem

• Solutions/methods
Lean Applications, Case Histories and Discussion

Customer Satisfaction with Child Nutrition

• Discussion

• Approach to problem

• Solutions/methods
Brief Review of Lean Solutions

Lean includes a wide array of improvement tools. Two most applicable to schools will be reviewed

• Voice of Customer
• 5S
• Value Stream Mapping/Process Improvement
• Process Redesign
Voice of the Customer

• Gaps between requirement and current delivery is where opportunities exist

• Six sigma goes beyond traditional anecdotal understanding of performance and quantifies it and allows a requirement driven process

• Change from fire fighting to disciplined improvement based on standards and/or customer requirements

• Goal is to identify as many opportunities as possible
Lean Solutions - Work Place Organization

5S is a structured approach to systematically clean and organize the workplace to support a lean working environment

**Waste identification and elimination**

- **Sort**
  - Check what is needed and get rid of what is not used

- **Set in order**
  - Place each item in its optimal position in the workplace and employ visual management

- **Shine**
  - Keep the area and equipment always clean.
  - Set a cleaning program

**Maintenance of improved condition**

- **Standardize**
  - Improve and maintain the first 3 "S" by improving the environment:
    - visual controls
    - standard machine improvements
    - standard procedures for all similar areas

- **Sustain**
  - Employ systems to monitor 5S and ensure that it is constantly maintained

**Objectives**

- Organize the workplace with the aim to
  - Identify and eliminate waste
  - Maintain and continuously improve the workplace/equipment
  - Improve morale and increase worker involvement

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5S - Organize Maintenance Inventory
Process Improvement

1. School processes can be complex

2. Usually evolve and aren't designed

3. Often involve excess paper flow

4. Slow – causing delays, issues, excess costs

5. Process and value stream mapping is the tool to use for improving processes
Example of Typical Process Map
# How Good are Your Processes?

Relative Scale of Process Efficiency and Effectiveness

<table>
<thead>
<tr>
<th>Scale</th>
<th>Process Efficiency</th>
<th>Process Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Class</td>
<td>Error Free, very short cycle times, no waste</td>
<td>Outputs exceed all customer requirements</td>
</tr>
<tr>
<td>Excellent</td>
<td>Very little waste, good cycle times, costs are low</td>
<td>Outputs meet all customer requirements</td>
</tr>
<tr>
<td>Good</td>
<td>Fairly efficient process, still has room for improvement</td>
<td>Outputs meet most customer requirements</td>
</tr>
<tr>
<td>Poor</td>
<td>Process is inefficient, needs to improve</td>
<td>Outputs meet some customer requirements</td>
</tr>
<tr>
<td>Broken</td>
<td>Major problems, long cycle times, high costs</td>
<td>Outputs not meeting basic customer needs</td>
</tr>
</tbody>
</table>
Example Improvement Process

1. Form a team
2. Select employees
3. Define the potential issues in a given area
4. Use measures to pinpoint issues
5. Understand the problem or process
6. Analyze the problem and develop solutions using Lean tools
7. Improve - Select the appropriate tools to develop a solution
8. Control – use measures to monitor and control improvement
Typical Improvement Project

Timeline

1. Leadership Sessions
   1. Identify Charter and Work Team
   2. Team Orientation
   3. Map current value stream map swim lane

2. Team Workshops
   1. PQI, ES
   2. Apply Lean Tools for Analysis
   3. Create Future State

3. Team Meetings
   1. Gather Data: Maps, Customer and Wastes
   2. Use data for analysis
   3. Share Future state map Plan to Implement

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Value Stream and Process Mapping
Simple Example – WO Process Mao

- **1) Receive WO**
- **2) Review WO**
- **3) Drive to Purchase Supplies**
- **4) Drive to School**
- **5) Check Part**
- **6) Return Part**
- **7) Exchange Part**
- **8) Return to School**
- **9) Install Part**
- **10) Return to Office**

### Table

<table>
<thead>
<tr>
<th>Step</th>
<th>Time</th>
<th>$/hr</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.1</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0.1</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0.5</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0.5</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0.3</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>0.5</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>0.25</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>0.5</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>0.5</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>0.5</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3.75</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

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Process Mapping Work Order Example
58% of Cost is Waste

<table>
<thead>
<tr>
<th>Work/Parts</th>
<th>Cost</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value Added Work</td>
<td>$8</td>
<td>6%</td>
</tr>
<tr>
<td>Incidental Work</td>
<td>$36</td>
<td>28%</td>
</tr>
<tr>
<td>Waste</td>
<td>$75</td>
<td>58%</td>
</tr>
<tr>
<td>Part</td>
<td>$10</td>
<td>8%</td>
</tr>
<tr>
<td>Total</td>
<td>$129</td>
<td>100%</td>
</tr>
</tbody>
</table>

Impact of Waste in Process:
Assume 500 work orders per FTE
$75/work order is wasted time
500 * $75 in waste/work order
3 FTE General Maintenance

What could be done with $112,500/year?
Process Mapping Work Order Example
Result of Mapping Time and Cost of Each Step

<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
<th>Time</th>
<th>$/hr</th>
<th>Cost</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Receive WO</td>
<td>0.1</td>
<td>30</td>
<td>$3</td>
<td>Incidental</td>
</tr>
<tr>
<td>2</td>
<td>Review WO</td>
<td>0.1</td>
<td>30</td>
<td>$3</td>
<td>Incidental</td>
</tr>
<tr>
<td>3</td>
<td>Drive to purchase supplies</td>
<td>0.5</td>
<td>30</td>
<td>$15</td>
<td>Waste</td>
</tr>
<tr>
<td>4</td>
<td>Drive to school</td>
<td>0.5</td>
<td>30</td>
<td>$15</td>
<td>Waste</td>
</tr>
<tr>
<td>5</td>
<td>Look for location, review part</td>
<td>0.5</td>
<td>30</td>
<td>$15</td>
<td>Incidental</td>
</tr>
<tr>
<td>6</td>
<td>Return part</td>
<td>0.5</td>
<td>30</td>
<td>$15</td>
<td>Waste</td>
</tr>
<tr>
<td>7</td>
<td>Exchange part</td>
<td>0.25</td>
<td>30</td>
<td>$8</td>
<td>Waste</td>
</tr>
<tr>
<td>8</td>
<td>Return to school</td>
<td>0.5</td>
<td>30</td>
<td>$15</td>
<td>Waste</td>
</tr>
<tr>
<td>9</td>
<td>Talk to secretary</td>
<td>0.25</td>
<td>30</td>
<td>$8</td>
<td>Waste</td>
</tr>
<tr>
<td>10</td>
<td>Install part</td>
<td>0.25</td>
<td>30</td>
<td>$8</td>
<td>Valued added</td>
</tr>
<tr>
<td>11</td>
<td>Return to office</td>
<td>0.5</td>
<td>30</td>
<td>$15</td>
<td>Incidental</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>3.95</td>
<td>30</td>
<td>$119</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Part Cost Ballast</td>
<td></td>
<td></td>
<td>$10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Cost</td>
<td></td>
<td></td>
<td>$129</td>
<td></td>
</tr>
</tbody>
</table>
Work Order Process Simplification

Work Order Process Options

- Eliminate steps
- Maintain central inventory of ballasts
- Vendor delivery
- Parts list for each building and room
- Parts list at vendor facility
Lean Applications and Case Histories

• **Case History # – Absence and Time Keeping**

• **Problem:** The current Absence forms and time sheet process includes several forms of waste such as (but not limited to): wasted transportation of paper, over 2700 papers/pay period, over processing, and defects. *These forms of waste are leading to Non-Value added steps in the process which is costing DCS unnecessary time and money.*

• **Lean Approach:** Big Picture—Introduce first district wide lean project and educate district on HOW lean can work for them. Used Value Stream Maps to identify where the waste was, Detailed Swim lane Process Maps to show elimination of steps.

• **Solution:** Paperless software (already owned), however, it took lean process thinking to map out how the software could be used in a way that could be easy for employees to input the information, principals/supervisors approve the requests, and easy for payroll to upload and pay the employees correct amounts.

• **Results:** Reduced cost of labor and paper costs by **$60,000/year!**
Absence and Timesheet Value Stream Map (with bursts)

Current State as of 2-30-2016, (Last Revision: 6-1-16)

By: Nathan Rohyans

Average Volume of Absence Forms, (C.O., all): 25-75, 2700+ papers
Average Volume of Dev. Sheets (C.O., all): 1, 23 sheets,
Average Volume of Time Sheets, (C.O., all): 30-35, N/A papers

Abbreviation Key:
PT= Process Time, Process time is only measure on how long it takes to do the job, no waiting times are factored in.
WT= Wait time, (non-process time)
D=Daily
W=Weekly
S=Sporadic
PPP=Per Pay Period
NVA= Non-Value Add (ed), typically used for steps that do not contribute to the completion of a process. For current state this could still overlap with Process times. Example: Filing away absence forms is NVA, but also PT.
<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Type of Waste (CS)</th>
<th>Description</th>
<th>Eliminated?</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&amp;2</td>
<td>Over Production</td>
<td>Employees filling out two forms with the same information</td>
<td>Yes</td>
<td>1-2 mins/occurrence</td>
</tr>
<tr>
<td>3</td>
<td>Transportation</td>
<td>Employee moving paper forms to mailboxes/secretaries/supervisors</td>
<td>Yes</td>
<td>Did not measure (Est. hundreds of steps)</td>
</tr>
<tr>
<td>4</td>
<td>Inventory</td>
<td>Storing Paper copied forms at the buildings</td>
<td>Yes</td>
<td>1-4 hours/pay period combined with the other</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>wastes in the secretaries process</td>
</tr>
<tr>
<td>5</td>
<td>Over-Processing</td>
<td>Alphabetizing and filing forms</td>
<td>Yes</td>
<td>1-4 hours/pay period combined with the other</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>wastes in the secretaries process</td>
</tr>
<tr>
<td>6</td>
<td>Waiting</td>
<td>Employees/Secretaries/Payroll waiting for signature from Supervisor or</td>
<td>Reduced</td>
<td>2700-3000+ forms/pay period across the district</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Principal</td>
<td></td>
<td>eliminated</td>
</tr>
<tr>
<td>7</td>
<td>Inventory</td>
<td>Form piles on supervisor/principals desk</td>
<td>Yes</td>
<td>2700-3000+ forms/pay period across the district</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>eliminated</td>
</tr>
<tr>
<td>8</td>
<td>Transportation</td>
<td>Mailing forms on mail route, went to all 21 buildings everyday</td>
<td>Yes (for</td>
<td>63 steps eliminated from the process (3 steps per</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>absences</td>
<td>each building every day)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>forms)</td>
<td></td>
</tr>
<tr>
<td>9&amp;10</td>
<td>Waiting/Inventory</td>
<td>Forms were sorted. Then forms waited in mail room in mailboxes to be</td>
<td>Yes</td>
<td>Wait time eliminated</td>
</tr>
<tr>
<td></td>
<td>over processing</td>
<td>picked up, sometimes overnight.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Transportation</td>
<td>walking forms to HR</td>
<td>Yes</td>
<td>Not measured (hundreds of steps)</td>
</tr>
<tr>
<td>12</td>
<td>Over-Processing</td>
<td>HR Signing forms</td>
<td>Yes</td>
<td>saved a few minutes every pay period</td>
</tr>
<tr>
<td>13</td>
<td>Transportation</td>
<td>walking forms to Payroll</td>
<td>Yes</td>
<td>Not measured (hundreds of steps)</td>
</tr>
<tr>
<td>14</td>
<td>Inventory</td>
<td>HR signed forms stored</td>
<td>Yes</td>
<td>2700-3000+ forms/pay period across the district</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>eliminated</td>
</tr>
<tr>
<td>15</td>
<td>Motion</td>
<td>All signers/sorters were wasting motion by signing and alphabetizing/storing</td>
<td>Yes</td>
<td>2700-3000+ forms/pay period across the district</td>
</tr>
<tr>
<td></td>
<td></td>
<td>forms</td>
<td></td>
<td>eliminated</td>
</tr>
<tr>
<td>16</td>
<td>Waiting</td>
<td>Forms waiting for HR signature</td>
<td>Yes</td>
<td>Waiting time was several days/weeks long</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>sometimes</td>
</tr>
<tr>
<td>17</td>
<td>Inventory</td>
<td>Storing forms</td>
<td>Yes</td>
<td>2700-3000+ forms/pay period across the district</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>eliminated</td>
</tr>
<tr>
<td>18</td>
<td>Motion</td>
<td>Alphabetizing and filing forms</td>
<td>Yes</td>
<td>2700-3000+ forms/pay period across the district</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>eliminated</td>
</tr>
<tr>
<td>19</td>
<td>Over-Processing.</td>
<td>Several steps of Payroll could be eliminated via a more automated process.</td>
<td>Reduced</td>
<td>Payroll has reduced some steps in their process</td>
</tr>
<tr>
<td></td>
<td>Under Utilization</td>
<td>Overall, the software was underutilized as well as the employees.</td>
<td></td>
<td>in the new state.</td>
</tr>
<tr>
<td>20</td>
<td>Defects (reprocessing)</td>
<td>Overall, there was several defects needing corrected or redone with all the</td>
<td>Yes</td>
<td>Several hours saved</td>
</tr>
<tr>
<td></td>
<td></td>
<td>manual processes of filling out multiple forms and deviation sheets</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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### Results Breakdown of Project and Standard Work

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>Future</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time (in hours)</td>
<td>Cost</td>
<td>Time (in hours)</td>
</tr>
<tr>
<td>21 Build Sec. Process (labor hours)</td>
<td>3404</td>
<td>$35,100</td>
<td>138</td>
</tr>
<tr>
<td>Payroll (labor hours)</td>
<td>432</td>
<td>$10,800</td>
<td>216</td>
</tr>
<tr>
<td>900 paper sheets/pay period (1-2 minutes/sheet to fill out by employee)</td>
<td>360-720</td>
<td>$9,000-$18,000</td>
<td>0</td>
</tr>
<tr>
<td>Cost of paper (hard cost)</td>
<td>N/A</td>
<td>$12,000</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>2196-2556</td>
<td>$66,900-75,900</td>
<td>354</td>
</tr>
</tbody>
</table>

Designed **Standard Work Documents** for people running payroll reports so that the report is pulled the same way for all 19 schools in the district. This helps auditing the process and holds everybody accountable.