MAKING STANDARD WORK STICK

Lean Six Sigma and Training Within Industry
Chris Lindstrom, Ceptara Corp.
Lean - 5S Exercise

• In consecutive order, i.e. 1 to 50, circle each number on the sheet and record how long it took to circle all 50 numbers.
  1. Start the timer
  2. Circle 1, 2, 3, 4, … 50
  3. Stop the timer
  4. Write down how long it took in minutes & seconds
Circle each number in ascending order: (1, 2, 3, ..., 50) and record how long it takes.
Circle each number in ascending (1, 2, 3, …50) order, record how long it takes.

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>31</td>
<td>32</td>
<td>33</td>
<td>34</td>
<td>35</td>
<td>36</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>40</td>
</tr>
<tr>
<td>41</td>
<td>42</td>
<td>43</td>
<td>44</td>
<td>45</td>
<td>46</td>
<td>47</td>
<td>48</td>
<td>49</td>
<td>50</td>
</tr>
</tbody>
</table>

Lean 5S Methodology
— Sort, Straighten, Shine, Standardize, Sustain
Introduction

• Christopher Lindstrom
  ▪ Managing partner at Mill Creek based Ceptara Corporation.
  ▪ Ceptara, established in 2002
    • Helps organizations grow revenues, reduce costs and delight customers through management consulting, business coaching, quality training and productivity tools utilizing Lean Six Sigma and project management experts.
  ▪ Experience
    • Over 20 years of management experience with technology companies such as AT&T, T-Mobile, Lucent, NCR, DEC/HP and Microsoft and a several small (< $50M) organizations (for profit and non-profit).
    • Certified Lean Six Sigma Master Black Belt and senior member of American Society for Quality.
    • Master’s of Science degree in Electrical and Computer Engineering from the University of South Carolina with an emphasis in neural networks and artificial intelligence.
    • Bachelors of Science degree in Electrical Engineering from the University of Nebraska.
Organizational Challenges

Could an ‘excellent’ organization have avoided the ‘Great Recession’?

From 2003 to 2008 the U.S. added ~40k companies (establishments) per year
In 2008 and 2009, the U.S. lost ~130k companies per year
Some Large Companies…

- Starbucks: ~2 Years
- Microsoft: ~2 Years
- Caterpillar Revenue: ~3 Years

2007 to 2011 Revenues
Some Large Companies…

Starbucks

Microsoft

Caterpillar Revenue

2007 to 2011 Revenues
An ‘Excellent’ Organization

- MESA – a manufacturer of products that prevent metal structures from corroding
  - Honored as a Presidential role model for the Malcom Baldrige Award in 2006
  - Received Small Business Baldrige award in 2012.
Organizational Excellence

• Baldrige provides a framework for describing a company’s System…
  ▪ Mesa has benefited from a systematic approach.

• Large Companies – none are Baldrige recipients.
  ▪ Starbucks and Caterpillar both have a strong commitment to Lean Six Sigma thinking.

• How to build an excellent organization?
Build an Excellent Organization

Method

- Strategic Alignment
- Build the System
- Sustain Momentum
- Continuous Improvement
- Measure For Success

Tools

- Hoshin Planning
- VOC
- Reengineering
- Six Sigma Project
- Balanced Scorecard
- QFD
- Kaizen
- Cycle Time Reduction
- TPM
- FMEA
- DOE
- Project Mgmt
- Setup Reduction
- Visual Controls
- Small Lots
- Kanban
- A3
- 1-Piece Flow
- SPC
- Waste
- Worker Realignment
- Workplace Reorganize
- DIG
- CAPA
- Affinity
- Fishbone
- 5S
- SIPOC
- RACI
- 5 Whys
- Statistics

Foundation
Standard Work

• Definition
  ▪ The sequential actions to complete a job without waste.
    • Takt-Time
    • Work Sequence
    • Standard In-Process Stock

• Benefits
  ▪ Manages change.
  ▪ Better outcomes.
  ▪ Better morale.

• Challenges
  ▪ Standard work must be followed.
Introduction to TWI

- History
- Relationship to Lean & Six Sigma
  - TWI emphasizes the importance of standard work
  - Provides tools and techniques
  - Benefits
    - Improves quality
    - Improves predictability
    - Reduces COQ
- Reference
  - Student Handbook
Supervisor’s Five Needs

• What is a “Supervisor”
• The Five Needs
  1. Knowledge of the Work
  2. Knowledge of Responsibilities
  3. Skill in improving methods
  4. Skill in leading
  5. Skill in instructing

Training Within Industry
• Job Instruction
• Job Relations
• Job Methods
Skill in Instructing…

- Some people are natural teachers – most are not!
- Some people THINK they are good teachers – but many are misinformed!
- Instructing is a skill and must be practiced to be mastered.
- Job Instruction teaches a proven method for teaching effectively…
Why Training is Vital…

- Things change:
  - Design changes
  - New or updated equipment
  - New job requirements
  - New standards
  - People are promoted
  - People leave

- Stuff happens:
  - Improper hires.
  - Ineffective training.
  - Mistakes occur.
  - Careless workers.
Ineffective Instructing…

• Telling Method
  ▪ Challenges:
  • Thought speed is greater than listening speed.
  • We are inefficient listeners.
  • Listening skills suffer with age.
  • Listening is hard work.

Top 10 Listening Bad Habits
10. Call subject uninteresting.
9. Criticize the speaker/teacher.
8. Become too stimulated.
7. Listen only for facts.
6. Try to organize the information.
5. Fake attention.
4. Create or tolerate distractions.
3. Evade difficult concepts.
2. Submit to emotion.
1. Waste thought power.
Ineffective Instructing…

• T-Shirt Example
  ▪ Demonstrate ‘Telling’ Instruction method.

“If the worker hasn’t learned, the instructor hasn’t taught.”
Ineffective Instructing…

• Showing Method
  ▪ Advantages
    • Sets the standard.
    • Emphasizes sequence.
  ▪ Challenges
    • Depends on a skilled instructor.
    • Small group focused.
    • Repetition for retention.
Ineffective Instructing...

- T-Shirt Example
  - Demonstrate ‘Showing’ Instruction method.

"If the worker hasn’t learned, the instructor hasn’t taught.”

Folding a T-Shirt Instructional Video
By Shoko
Effective Instructing…

• TWI Job Instruction

Prepare to Instruct
1. Have a Time Table
2. Break Down the Job
3. Have Everything Ready
4. Have Workplace Arranged

How to Instruct
1. Prepare the Worker
2. Present the Operation
3. Try Out Performance
4. Follow-Up

HOW TO GET READY TO INSTRUCT

Have a Time Table –
How much skill you expect the worker to have, and by what date.

Break Down the Job –
List important steps.
Pick out the key points. (Safety is always a key point)

Have Everything Ready –
The right equipment, materials, and supplies.

Have Workplace Properly Arranged –
Just as the worker will be expected to keep it.

HOW TO INSTRUCT

Step 1 – Prepare the Worker
Put the worker at ease.
State the job and find out what he/she already knows.
Get worker interested in learning the job.
Place in correct position.

Step 2 – Present the Operation
Tell, show and illustrate one IMPORTANT step at a time.
Stress each KEY POINT.
Instruct clearly, completely, and patiently, but no more than can be mastered.

Step 3 – Try Out Performance
Have worker do the job, correct errors.
Have worker explain each KEY POINT to you as he/she does the job again.
Make sure the worker understands.
CONTINUE until you know, he/she knows.

Step 4 – Follow-Up
Put worker on their own. Designate to whom he/she goes for help.
Check frequently. Encourage questions.
Taper off extra coaching and close follow-ups.

If Worker Hasn’t Learned,
The Instructor Hasn’t Taught.
Effective Instructing...

- T-Shirt Example
  - Demonstrate Method.

“If the worker hasn’t learned, the instructor hasn’t taught.”
Standard Work & TWI

• Standard Work
  ▪ Complete document for a specific process or procedure in a production area – includes:
    • Connection to company strategies
    • Safety Impacts
    • Environmental Impacts
    • Procedural Steps
  ▪ Controlled document

• Job Breakdown Worksheets
  ▪ Instructional aids
  ▪ Used by the Supervisor / Trainer

• One Point Lessons
  ▪ Visual illustration of a step or sub-step.
  ▪ Used by operators as reference.
Job Relations

• Supervisor’s Five Needs
  1. Knowledge of the Work
  2. Knowledge of Responsibilities
  3. Skill in improving methods (Job Methods)
  4. Skill in leading (Job Relations)
  5. Skill in instructing (Job Instruction)
Supervisor’s Challenges…

• Worker Importance
  ▪ Business value is defined by our customers.
  ▪ People & machines create business value.
  ▪ Machines are assets (TPM)
  ▪ People are assets – but different.

• Supervisor Importance
  ▪ Supervisor and the Worker relationship defines 90% of the worker’s experience.
  ▪ Supervisors can only produce results through cooperation with people inside and outside of his/her area of responsibility.

• Cooperation is the best and most efficient way of delivering results.
Foundations for Good Job Relations

There are some things that we as supervisors can do, everyday, to keep job relations in good condition.

1. Let each worker know how he/she is getting along
2. Give credit when credit is due
3. Tell people in advance about changes that will affect them
4. Make best use of each person’s ability

These foundations are important to everyone. Using them will smooth job relations and head off problems before they occur!
When something happens...

- **Get the Facts**
  - Review the Record.

- **Weigh and Decide**
  - Don’t Jump to Conclusions!

- **Take Action**
  - Don’t Pass the Buck!

- **Check Results**
  - Improve Production!

- Then what should we do with these facts?

- After deciding, what should we do next?

- After taking action, what should we do next?

- Learn
  - Improve our Foundations
Effective Leading...

- **TWI Job Relations**
- **Foundations for Good Relations**
  1. Let each worker know how they’re doing
  2. Give credit when due
  3. Advance notice
  4. Best use of abilities
- **Handle a Problem**
  1. Get the Facts
  2. Weigh & Decide
  3. Take Action
  4. Check Results
  5. Learn
Conclusion

• Supervisor’s Five Needs
  1. Knowledge of the Work
  2. Knowledge of Responsibilities
  3. Skill in improving methods (Job Methods)
  4. Skill in leading (Job Relations)
  5. Skill in instructing (Job Instruction)
MAKING STANDARD WORK STICK

Lean Six Sigma and Training Within Industry

**Chris Lindstrom**
Ceptara Corp.  
Managing Partner  
Mbl: 888-942-4625 x700  
E/M: chris@ceptara.com

LSS Master Black Belt, ASQ CSSBB

**Harry Kenworthy**
QPIC, LLC.  
Principal & Manager  
Mbl: 860 918.0649  
hwk455@comcast.net
LSS & TWI

The End