

## Secrets of Engaging Staff to Create and Sustain Use of Standard Work in the Lab

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### Session Objectives— To Answer the Following Questions:

- ✍ **What is standardized work?**
- ✍ **Why is standardization important?**
- ✍ **What are the benefits of standardized work?**
- ✍ **What are standard work tools and how are they developed?**
- ✍ **How do you maintain standard work over the long term?**
- ✍ **How do you get your staff to change their old work habits?**
- ✍ **What are some myths around standardized work?**
- ✍ **What are my seven secrets to implementing standardized work?**



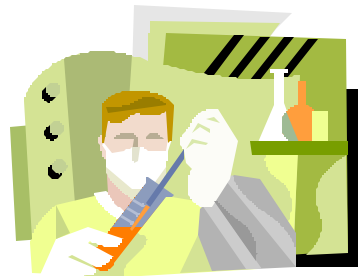
## What is Standardized Work?

- ✘ Detailed and documented system in which each worker develops and follows a repeatable sequence of tasks within a work assignment
- ✘ Work sequence represents the best practices to follow
  - ✘ Documented and displayed at each workstation
  - ✘ Employees are taught these practices
  - ✘ Adherence to work sequence is audited
- ✘ The experts (i.e. the workers) determine the work sequence and timing of events
- ✘ Once the sequence of job elements is effectively organized, it is repeated over and over by the workers



## What is Standardized Work?

- ✘ Aim is to reduce the variation introduced by the operator to
  - ✘ Eliminate waste, and
  - ✘ Achieve high productivity
- ✘ Baseline for a continuous improvement philosophy that involves the employees



## Three Fundamental Principles

- ✂ **Principle #1: Improve Quality**
  - ✂ Design work elements where the variation introduced by the worker is minimized
  - ✂ Generate and maintain a baseline
  - ✂ When problems arise, audit back to the standard
  - ✂ Either return to the baseline or improve the process



## Three Fundamental Principles

- ✂ **Principle #2: Eliminate Waste**
  - ✂ Focus on reducing unnecessary movement of the workers (i.e. waste)
  - ✂ Make steps to eliminate waste once it is identified
  - ✂ Charge workers with the responsibility to identify waste and continually improve their processes



## Three Fundamental Principles

### ✂ Principle #3: Involve Employees

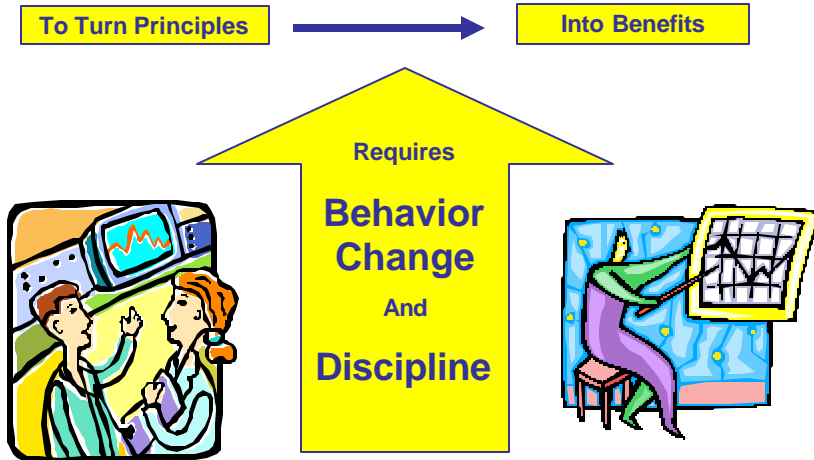
- ✂ Encourage workers to become involved, rather than using management engineers to set work practices
- ✂ View standardized work as the vehicle through which employees can be involved and voice his/her opinion on how to do the work
- ✂ Note: workers must be willing to change their behavior to benefit from standardized work



## Why is Standardization Important?

- ✂ Maintains the level of **QUALITY**
- ✂ **STABILIZES** the working conditions
- ✂ Increases the level of **SAFETY**
- ✂ Allows clear judgment of **NORMAL FROM ABNORMAL** conditions
- ✂ **COST REDUCTION**
- ✂ Stability of operating time (**TAKT TIME**)
- ✂ **ELIMINATE WASTE**
- ✂ Improve **MORALE**
- ✂ Increase **PRODUCTIVITY**
- ✂ Provides the basis for **CONTINUOUS IMPROVEMENT**

## Principles and Benefits of Standardized Work



## Wait, We Have to Change?



## How People React to Change

Simply put, very differently, depending on three factors:

1. How much change will disrupt their expectations or perceptions.
2. How willing and capable they are to accepting the change.
3. Their individual level of control in the situation.



## Four Emotional Stages

### 1. Disbelief and Denial

- ✍ "It won't happen to me."
- ✍ "If I just keep my head down, it'll be business as usual."

# Denial

### 2. Anger and Blame

- ✍ "Why should I change?"
- ✍ Withdrawal
- ✍ Lack of concentration
- ✍ Increase in accidents, drop off in quality, absenteeism

# Resistance

## Four Emotional Stages, cont.

### 3. Reluctant Acceptance

- ✍ People begin to accept
- ✍ Start to explore their role

Exploration  
Exploration

### 4. The Final Stage

- ✍ Focus on the future instead of dwelling on the past
- ✍ Clear sense of their roles

Commitment

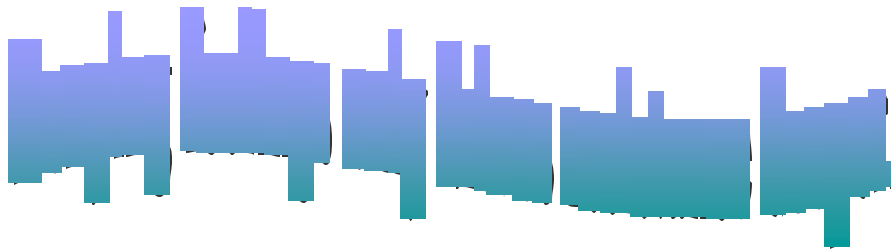
## During Denial

1. Do everything you can to minimize the shock.
2. Plan ahead.
3. Give staff plenty of information – what the changes will be, who will be affected by them and how.
4. Give staff best estimate of the timeframe.
5. Give staff a chance to prepare themselves.
6. Let the changes sink in.

You cannot over-communicate now!

## During Resistance

1. Listen to what people have to say.
2. Empathize.
3. Don't tell them to snap out of it or pull themselves together.
4. Don't give solutions – just acknowledge their responses and reactions.



## During Exploration

1. Give practical encouragement and support.
2. Provide training.
3. Involve staff in planning and setting goals.
4. Focus on short term wins.
5. The response will be good if people can see the positive impact of the change.

**Show the benefit of the changes**



## During Commitment

1. Set about consolidating the change.
2. Implement an appropriate cultural change program.
3. Recognize and reward people who are responding well.

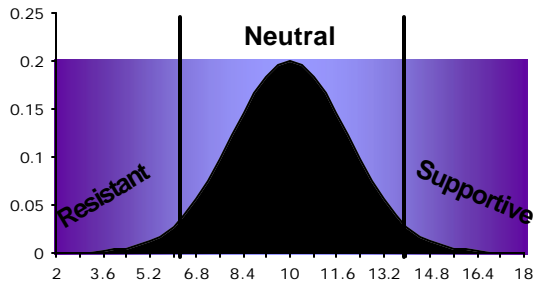


## Three Truths of Change

1. People do what they create.
2. Some people will NEVER go along.
3. Killing the messenger kills change.



## The Attitude Bell Curve



Assume the following:

- ✍ 15% are supportive
- ✍ 15% are resistant
- ✍ 70% are neutral

Resisters – some may join the majority of the staff, some may leave



**Key is to concentrate on the neutral 70% and move them to the right!**

## Top Ten Reasons to Follow Standardized Work

10. SW uses takt time to synchronize production to demand.
9. SW provides a basis for comparison.
8. SW prevents waste, variability and overproduction.
7. SW is a tool for continuous improvement.
6. Producing to takt time allows support areas to balance their workload.
5. SW allows for analysis of what went wrong when problems occur.

4. Following SW means that all quality and safety requirements are met.
3. SW is a visual control tool.
2. SW is flexible and allows addition or subtraction of workers as customer demand dictates.

And the Number 1 reason to follow Standardized Work...

1. SW helps us improve safety, quality, cost, delivery, productivity, and morale and transforms the work environment.

## Myth #1

✗ If we have standardized work, anyone can learn everything about the job by looking at the documents.

✗ **FALSE!**

- ✗ This is often misinterpreted
- ✗ Work elements are only defined in basic terms
- ✗ Work is not so simple that “everything you need to know” is on a few sheets of paper



## Standardized Work: Simple Tools

### 1. Job Analysis Data Sheet

- ✗ Identify the steps that must be accomplished to complete work processes one time.
- ✗ What are the time elements involved in each step of the process? How long does it take to perform each work element?
- ✗ Can some elements be combined to save time?
- ✗ Can some of the work elements be combined to level staff member workloads?
- ✗ What is the bottle-neck process in the work cell? (Any log jams?)

### 2. Standardized Worksheet

### 3. Stack Chart (line balance)

## 1. Job Analysis Data Sheet

Job Description: Making Pen Holders	Operator Name:	Shift:	Date:	Analyst:			
<b>Repetition with Time in Seconds</b>							
Work Element	1	2	3	4	5	6	7
1. Cut 1, 2, & 3	27.5						
2. Cut 4, 5, & 6	62.9						
3. Cut 7 & 8; Fold 1 through 8.	139.4						
4. Glue and Assemble Pen Holder	224.7						
5. Stuff Assembled Holder with Tissue paper, Candy and Pen.	233.2						
Total For Each cycle	233.2						

Fill in Cumulative Running Time First

## 1. Job Analysis Data Sheet (cont.)

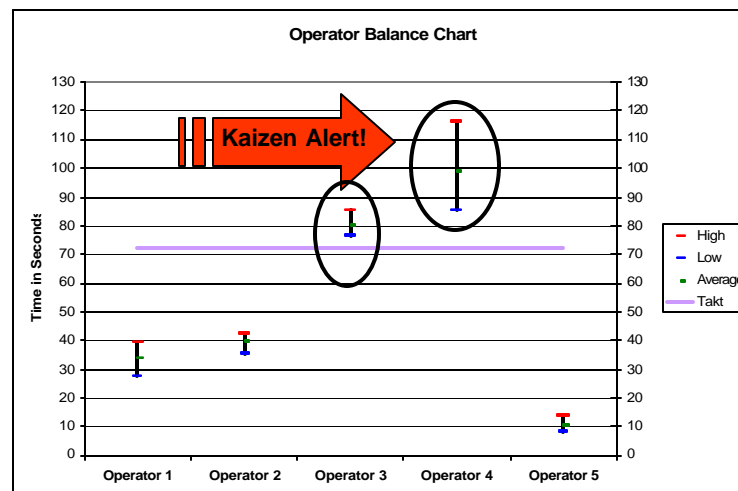
Job Description: Making Pen Holders	Operator Name:	Shift:	Date:	Analyst:			
<b>Repetition with Time in Seconds</b>							
Work Element	1	2	3	4	5	6	7
1. Cut 1, 2, & 3	27.5						
2. Cut 4, 5, & 6	35.4						
3. Cut 7 & 8; Fold 1 through 8.	76.5						
4. Glue and Assemble Pen Holder	85.3						
5. Stuff Assembled Holder with Tissue paper, Candy and Pen.	8.5						
Total For Each cycle	233.2						

Then calculate individual work element time by subtracting

## 1. Job Analysis Data Sheet (cont.)

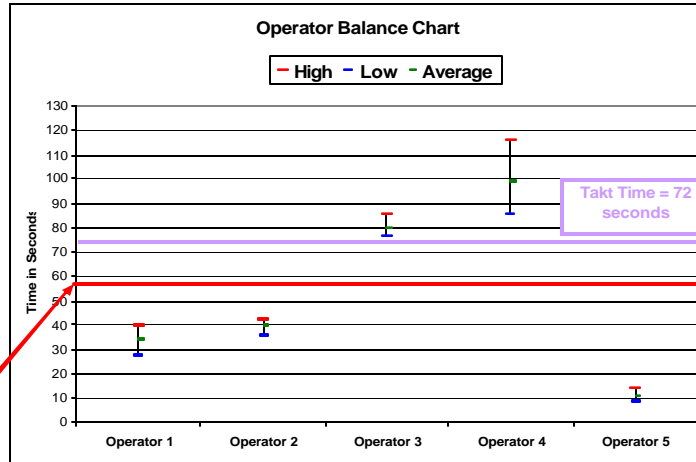
- ✂ Work elements should be developed by the operators performing the work.
  - ✂ Each work element has to be measured from fixed point to fixed point—a defined beginning and end point.
  - ✂ The operators must agree what the work elements are--standardization.
  - ✂ At least ten measurements of each work element should be timed.
  - ✂ An “Operator Balance Chart” with cycle time variation should be developed from this information.
    - ✂ Pay particular attention to the minimum and maximum times.
    - ✂ Do not use averages.
    - ✂ Variation between the minimum and maximum should be the area of focus for standardized work waste reduction—kaizen.

## 1. Job Analysis Data Sheets (cont.)



## 1. Job Analysis Data Sheets (cont.)

Plan production time for each value-added operator at 80% of Takt Time



## Standardized Worksheet Example

### Standardized Worksheet for Embedding Station

No.	WORK ELEMENTS	Icon	KEY POINTS Safety, Quality, Technique, Cost	TIME ELEMENTS			
				Auto	Manual	Wait	Walk
1	Turn on cold plate			X			
2	Fill and turn on water bath						X
3	Push 'drain' button on processor			X			
4	Remove basket when drained				X		
5	Close lid				X		
6	Push 'clean' button			X			
7	Walk basket to embedding station w/labels	+	Place papertowels under basket				X
8	Check cassettes against transport log	+	Set aside problem cases		X		
9	Place basket in paraffin bath				X		
10	Take 1 (one) cassette from basket	+	Use large forceps		X		
11	Remove cassette lid	;	Take care not to displace tissue		X		
12	Warm appropriate sized mold					X	
13	Put some paraffin in mold				X		
14	Place tissue in mold	+	Use small forceps		X		
15	Scrape paper w/scapel if tissue not visible	;	ask co-worker to check paper		X		
16	Orient tissue on same plane visible	;	orient skin on a 45 angle				X
17	Move mold to cold plate	;	Ensure wax doesn't solidify			X	
18	Place block lid on mold				X		
19	Fill mold with paraffin				X		
20	Put on cold plate to cold						X
21	Remove block from mold				X		
				TOTALS			

KEY	
SAFETY	+
QUALITY CHECK	;
IN-PROCESS STOCK	?

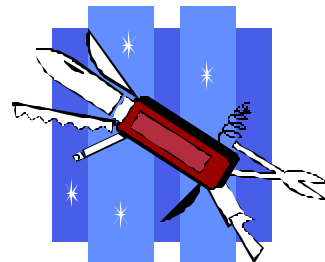
## Myth #2

- ✗ If we have standardized work, we can bring anyone off the street and train them to do the job in a few minutes.
- ✗ **FALSE!**
  - ✗ See Myth #1
  - ✗ Often used in conjunction with a reference to bringing “monkeys” in off the streets
  - ✗ Shows lack of respect for employees and their abilities
  - ✗ This mind-set needs some adjusting!



## Myth #3

- ✗ We can incorporate all details of the work and standards into the standardized worksheet.
- ✗ **FALSE!**
  - ✗ It is a specific tool, not a Swiss Army Knife!
  - ✗ Use it to identify and eliminate waste
  - ✗ Use it as a visual reference to ensure adherence to the standard



## Simple Tools

### 1. Job Analysis Data Sheet

### 2. Standardized Worksheet

- ✍ What are the steps needed to complete this process? (Work sequence)
- ✍ What are the safety and quality concerns with this process?
- ✍ How much work can be performed at one time in this process?

### 3. Stack Chart (line balance)

## 2. Standardized Worksheet

- ✍ **Must contain three elements:**
  - ✍ Takt time = the time required to complete one job at the pace of customer demand
  - ✍ The work sequence of doing things or processes
  - ✍ Standard work in process or stock—the amount of WIP or stock on hand that the worker needs to have in order to accomplish the standardized work
- ✍ Standardized work is centered around human movement/activity at the workbench level.
- ✍ Work is performed the same way every time, by every member of the team.





## 2. Standardized Worksheet— Basic Work Elements

- ✂ Your ability to describe a job in terms of work elements is an important skill for creating Standardized Worksheets and teaching it to your staff.
  - ✂ Elements are used to describe the steps to operate a machine, assemble a test, or set up a test.
  - ✂ Their purpose is to make instruction clear and easy to understand.
  - ✂ Work elements usually take the form of a verb/object.

## 2. Standardized Worksheet— Examples of Work Elements

- ✂ Pipette 100  $\mu$ L of serum.
- ✂ Add 300  $\mu$ L of PBS.
- ✂ Incubate at 37° C for 30 min.
- ✂ Transfer 20  $\mu$ L of diluted specimen to the reaction well.
- ✂ Examine at 40x for the presence of cells.
- ✂ Push the start button.

## 2. Standardized Worksheet— Poor Examples of Work Elements

- ✗ Dilute all specimens (too general).
- ✗ Assemble all test materials (too broad).
- ✗ Hold the tissue block and trim it with a razor blade until the desired shape and size is obtained (multiple steps).
- ✗ Arrange 12 test tubes in a rack (too detailed).

## 2. Standardized Worksheet— Key Points

- ✗ Key points involve such factors as special motions, special information, feel, knowledge of risk or maybe the ability to distinguish unusual sounds.
- ✗ One of the following conditions must be met:
  - ✗ Safety (injury prevention)
  - ✗ Quality (defect detection)
  - ✗ Technique (ease of work, look and feel)
  - ✗ Cost (material usage)

## 2. Standardized Worksheet— Examples of Key Points

- ✗ Inspection test tube label to ensure proper alignment. (No defects passed down stream.) (Quality)
- ✗ When trimming tissue specimens, cut from the front to the back, moving the knife away from your hands and body. (Safety)
- ✗ The test ordering sequence must include depressing the star key or the order will not upload. (Technique)
- ✗ ALWAYS add acid slowly to water (Safety)
- ✗ NEVER add water to acid (EXPLOSION DANGER)

## Work Elements vs. Key Points

### Work Elements

- ✗ Logical segments of work
- ✗ Tells “what” to do in step wise fashion to complete the work process one time
- ✗ Not overly descriptive
- ✗ Measure from fixed point to fixed point

### Key Points

- ✗ Conveys special information
  - ✗ Safety
  - ✗ Quality
  - ✗ Technique
  - ✗ Cost
- ✗ Tells “how” to do it

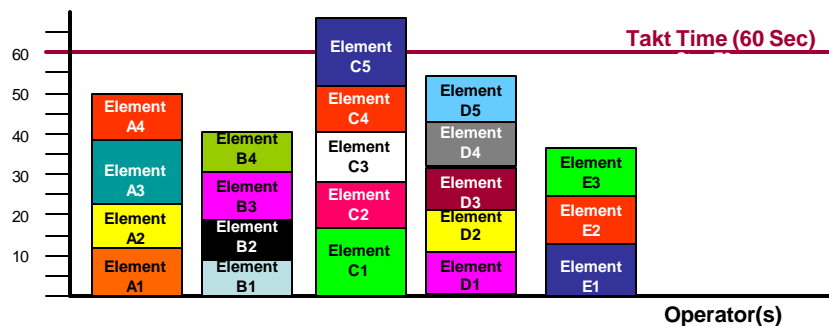
**Identifying Work Elements and Key Points is an important skill for preparing Standardized Worksheets.**

## Simple Tools— Stack Chart for Line Balancing

1. Job Analysis Data Sheet
2. Standardized Worksheet
3. Stack Chart (line balance)
  - ✍ How are the machines and staff members in the workcell being utilized?
  - ✍ Can work from one machine, work process, person or area be transferred to/from another machine, work function, person or area?
  - ✍ Do we need to add/subtract another machine, work process step or staff member?

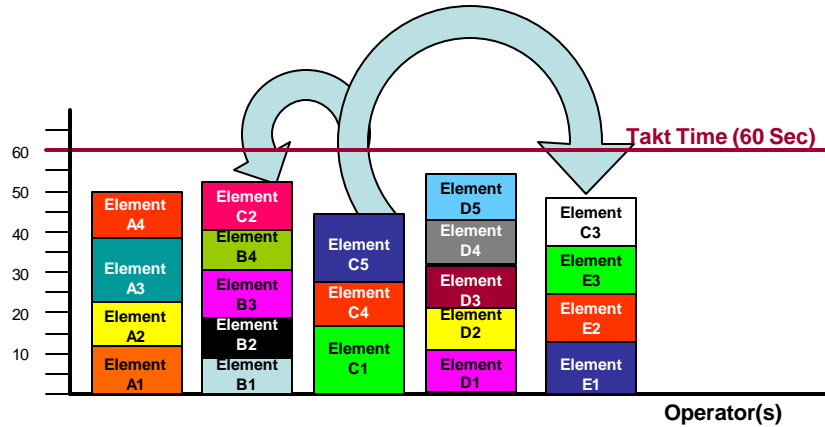
## 3. Stack Chart for Line Balancing – Kaizen to Balance the Workload

- ✍ Operator B and E have time to spare
- ✍ Operator C is not meeting customer demand
- ✍ Solution: Kaizen the C work cell as shown on the next slide.



### 3. Stack Chart for Line Balancing— Balanced Production

- ✍ Process C2 is moved to the B work cell while process C3 is moved to the E work cell.
- ✍ Everybody meets takt time.



### Myth #4

- ✍ We will post the document so the workers can look at the sheet each day to remember how to do the job.
- ✍ **FALSE!**
  - ✍ Is posted but not for workers
  - ✍ Complete misunderstanding of a visual standard
  - ✍ Utilized by **MANAGEMENT** for adherence to the standard
  - ✍ Used in auditing and diagnosing worker error
  - ✍ Makes mistakes visible to they can be fixed



## Myth #5

- ✗ **Employees develop their own standardized work.**
- ✗ **PARTIALLY TRUE, but . . .**
  - ✗ **First done in a team by members who represent the workers**
  - ✗ **Often these members can't agree and take days to resolve**
  - ✗ **Don't have "free will" to create work any way they like**
  - ✗ **Employees later challenged to develop better methods but those are reviewed by management**



## Myth #6

- ✗ **If we have standardized work, workers will do the job properly and will not deviate from the standard.**
- ✗ **FALSE!**
  - ✗ **Nothing prevents deviation except the visual awareness of others**
  - ✗ **Goal is to make any deviation immediately recognizable**
  - ✗ **Establish negative consequences**
  - ✗ **Supervisor's job is to ensure standardized work is followed**



## Secret #1: Establish a Greater Sense of Urgency

- ✍ How most successful changes begin
- ✍ Crises: potential disasters or great opportunities
- ✍ Over 50% have failed early, because of :
  - ✍ Underestimate motivating people
  - ✍ Overestimate their success
  - ✍ Lack of patience
  - ✍ A paralyzed senior management



## Secret #1: Key Tips to Create That Sense of Urgency

- ✍ Identify threats (try benchmarking, external assessment, business case, competition)
- ✍ Align goals and metrics, keep list short
- ✍ Manage upward – create the urgency yourself
- ✍ Do a pilot project, “Let’s try it!”
- ✍ If there’s no urgency and you can’t create any . . .



(put your Lean plan on the shelf)








## Secret #2: Understand the Power of Human Resistance

**“Most people would rather live with a problem they cannot solve than accept a problem they cannot understand.”**

**-- Woolsey/Swanson**

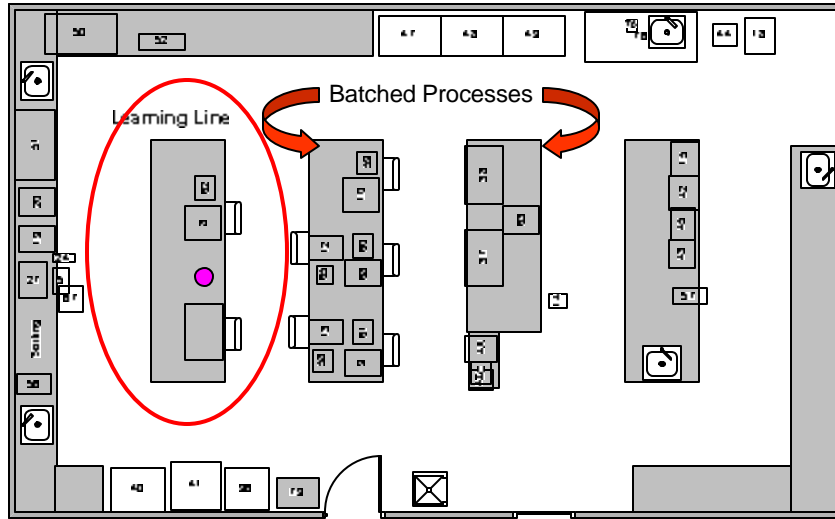


## Secret #2: Key Tips to Overcoming Resistance

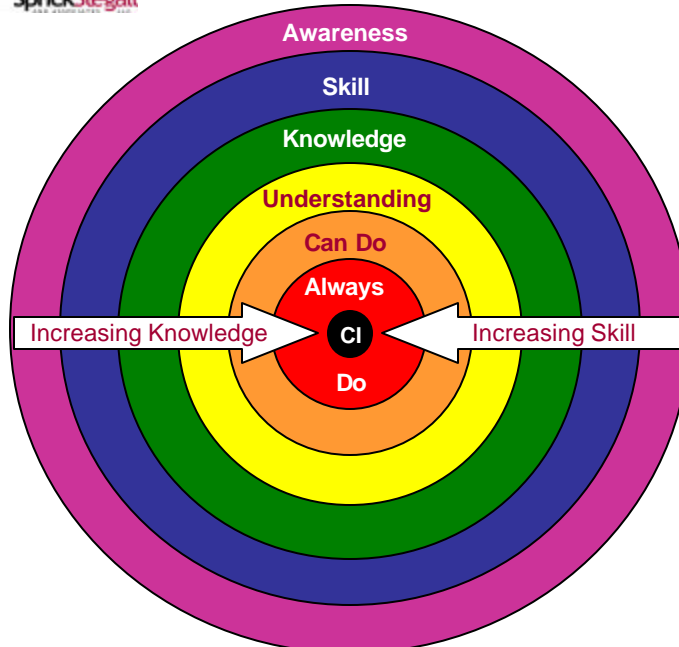
-  **Make holding on to the past more painful than facing the future**
-  **Expose your people to new ideas, i.e. Lean Boot Camp**
-  **Do a pilot project**
-  **Use a “learning line” to introduce new concepts**
-  **Teach people, work alongside them, “trust me”**

# Learning Line

Used to teach workers before full implementation.



# Teaching



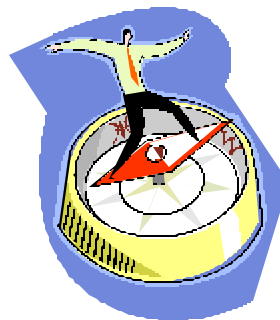
It is imperative to achieve "aha" before moving to the next level.

## How to Teach

Trials	TEACHER		LEARNER	
	1	TELL	DO	LISTEN
2	TELL	WATCH	LISTEN	DO
3	TELL	DO	LISTEN	WATCH
4	TELL	WATCH	LISTEN	DO
5	LISTEN	WATCH	TELL	DO

## Secret #3: Have a Vision

- ✍ In very successful cases, executive leaders articulate a clear picture of the future.
- ✍ A vision says something that helps clarify the direction in which an organization needs to move
- ✍ Keep list short (3-4 events)
- ✍ Focus on getting results
- ✍ Use a dashboard
- ✍ Set a top-down mandate



## Secret #4: Over Communicate the Vision

- ✍ **Three patterns with respect to communication:**
  - ✍ **Holding single meeting or sending out a single communication**
  - ✍ **Making speeches to groups of employees**
  - ✍ **Newsletters and email**
- ✍ **Particularly challenging in case of short term sacrifices**
- ✍ **Walk the talk, nothing undermines change more than wrong behavior by important individuals**

## Secret #5: Remove Obstacles to the New Vision

- ✍ **Obstacles for employees:**
  - ✍ **Narrow job definitions; revise them**
  - ✍ **Compensation and appraisal system; revamp it**
  - ✍ **Materials they need; buy them**
- ✍ **The action is essential both to empower others and to maintain the credibility of change effort**
- ✍ **Make any physical changes quickly**

## Secret #6: Systematically Plan for and Create Short Term Wins

- ✍ In successful cases manager actively plan to achieve objectives. They don't HOPE FOR.
- ✍ Show people the effects of new approaches
- ✍ Take suggestions but maintain Lean principles
- ✍ Don't allow a pilot project to stay as one
- ✍ Move into live environment ASAP
- ✍ Don't allow non-participation to go un-noticed
- ✍ In the final analysis changes sticks when it becomes "the way we do things around here"

## Secret #7: Don't Declare Victory Too Soon

- ✍ New approaches are fragile and subject to regression
- ✍ Insist on doing it the new way
- ✍ Visualize an implementation curve over 1 year
- ✍ What, instead of declaring premature victory, lead them to their own discovery
- ✍ Audit, audit, audit (can't say it enough)



## Maintaining Standardized Work

1. Establish a formal process to enforce standardized work
2. Use an audit form to document conformance
3. Ask: “How well does the worker conform to it?”
4. Turn audit into a training tool for employees
5. Conduct audits by supervisor, not colleague



## Auditing Standardized Work

- ✗ Does the number of SW charts match the number of operators in the work cell?
- ✗ Are the SW charts posted in the work cell?
- ✗ Is the takt time on each chart correct?
- ✗ Is the work cell running to takt time?
- ✗ Is the drawing/layout correct?
- ✗ Does the chart match the master control copy?
- ✗ Is the work sequence shown on the chart correct?
- ✗ Are the times correct for each operating step? (attach time study of at least 5 consecutive cycles)
- ✗ Are the appropriate signatures present and dated on the chart?
- ✗ Are all of the assigned tasks being performed by this operator?
- ✗ Are all data collection forms being completely and correctly filled out?
- ✗ Are all safety and quality checks being performed?

## Final Tips

1. Be mentally tough.
2. Show determined leadership.
3. Persevere under the most stressful resistance.
4. Don't create more resistance by attempting fight or control every aspect.
5. Don't take the resistance personally.
6. Set the standard for others to emulate.
7. Exert your focus where the impact is the greatest.
8. Let go of things you can't control.



## My Final Word

**Standardized work must be developed with respect for people. But respect for people should not be confused with “respect for old habits.”**

# Thank You!

