

January 11, 2012

Wednesday's Words of Quality

The Process of Process Improvement and the A3 Problem Resolution

"A fresh attitude starts to happen when we look to see that yesterday was yesterday, and now it is gone; today is today and now it is new." -Tibetan Buddhist Lama, Dzigar Kongtrul Rinpoche

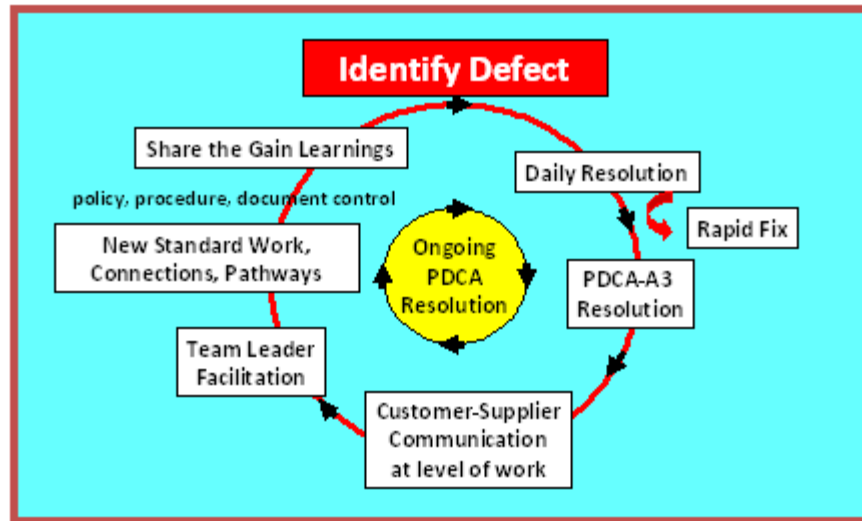
How do we make change continuously in our blameless culture in the Henry Ford Production System? From previous parts of this series I have described the organizational structure of teams and team leaders, armed with standardized work rules and technical tools of improvement, using whiteboards in a visual workplace. But what is the successful process for problem resolution of individual work defects and systematic deficiencies in this continuous improvement culture?

With the use of white boards located in each work station to 'sense the pulse of the machine' in real-time, the employees themselves, who are closer to the point of receiving or producing work defects, are empowered through a defined process improvement routine to work toward effective resolutions in concert with their team leader or teacher. This team based, worker empowered approach to continuous problem resolution has been described as the 4th "Rule in Use" of the Toyota Production System by Steven Spear and clarified as the 'Improvement Kata' by Mike Rother.

The Improvement Kata, founded in **Plan-Do-Check-Act (PDCA)**, deals with scientific experimentation, discovery and learning in the workplace. At its core, this approach to problem solving relies on the development of people so that insight into root causes and proposed interventions and process repair arises closest to the level of the actual work and those who do it. With employees engaged and accountable for solving their own work problems, this is how the culture changes for the workforce from one of hiding and blaming to one of openness and learning.

The process that we follow in the Henry Ford Production System to effect continuous improvement year after year looks like this:

The Process of Process Improvement



The process of fixing the identified defect may take the form of:

1. A rapid, often daily resolution (just fix it in place when found)

This may be elevated to a more involved process with-

2. A **PDCA** based data-driven (A3) resolution with root cause analysis that requires further study about the nature of the defect (e.g., frequency, type, associations, root cause, etc)

This may require team members to represent their team in Customer-Supplier meeting between work stations to better define work requirements and understand root causes and how work can be redesigned for a better outcome

In our Henry Ford Production System Lean culture the second more involved resolution process calls for creating a **PDCA** storyboard of the defect and the proposed countermeasures on a large A3 size piece of paper. This is known from Toyota as an A3 resolution and requires teams to think through the problem more slowly, to go and see, to analyze for root cause in order to understand the problem better. Only then can proposed interventions or changes be entertained and tested as pilots and the effect measured against a baseline. This type of change requires data, before and after, that define aspects of the condition that need improvement.

The defined aspects of an A3 that we have adapted over the past 6 years in the Henry Ford Production System are shown below. The left side describes the **PLAN** aspects of the current state problem, analysis with data, the target condition and the proposed solution while the right side defines actions of the proposed solution and the measured outcome (**DO- CHECK** and **ACT**). Our understanding of the **ACT** aspect of **PDCA** emphasizes standardization of the new work activities to sustain the improvement.

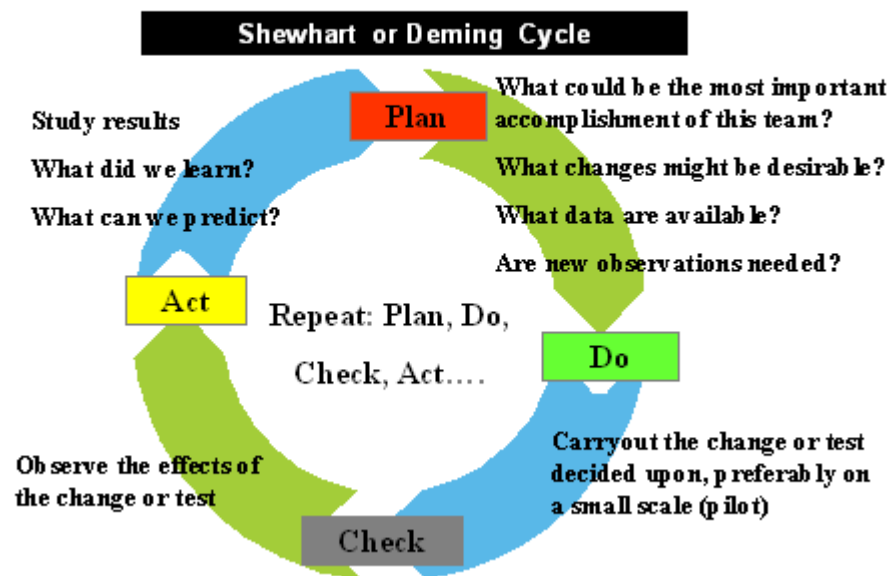
A3 Report

Plan	Do-Check-Act
Problem Background Write the problem statement Narrow down to specific issue Background information to understand	Implementation Plan Roll out the steps of the "Action Plan" as a pilot Assign responsibility to implement the plan - Who? When? Where? Train and educate all involved
Hypothesis What is the educated guess?	Results Is the plan effective? Recollect data and compare to the "Current Condition" Did we reach the outcome set in "Target Condition"? If not, repeat PDCA cycle
Current Condition What is the baseline? Collect simple data. What does the data tell us? Analyze data and display in graphs or maps to show the current situation	Metrics Assign responsibility for monitoring & sustaining the new results
Problem Analysis What is the root cause of this problem? Choose simplest problem-analysis tool Ask "why" 5 times	Standardization Standardize the process to reduce variation Post standard work as a part of daily routine where work is performed Change policy and procedure as necessary Audit compliance with the new work routine
Target Condition What is the outcome needed to achieve? What is possible to achieve from first round?	
Action Plan What steps are required to achieve the outcomes decided in the target condition? Action to prevent root cause from reoccurring?	
The way things happen now - The CURRENT STATE	The better way of working - on the incremental path to the IDEAL STATE

Henry Ford Production System

This approach above leverages **PDCA** thinking repeatedly by incrementally moving toward successive targets of improvement through a process of testing many proposed interventions at the level of the work. This now is the basis or routine of problem solving in a continuous improvement culture as proposed by Dr. W. Edwards Deming in the 1950s who in turn borrowed the **PDCA** concept from Dr. Walter Shewhart who originated it in the 1930s. The typical questions you would ask yourself and share as a team to drive **PDCA** based change are described below.

Never Ending Cycle of Continuous Improvement



Henry Ford Production System

Now, I'm asking you to borrow all of these concepts and truly integrate them into your own process of problem solving in 2012.

As you can see, there is "nothing new under the sun." Just better approaches to execution as described in the many academic texts elaborating on Toyota's production system.

References:

1. Liker J. The Toyota Way. 14 Management Principles from the World's Greatest Manufacturer. New York: McGraw-Hill, 2004.
2. Ohno T. Toyota Production System: Beyond Large-Scale Production. Portland, OR: Productivity Press; 1988
3. Rother M. Toyota Kata. Managing People for Improvement, Adaptiveness and Superior Results. New York: McGraw-Hill, 2010.
4. Spear SJ, Bowen HK. Decoding the DNA of the Toyota Production System. Harvard Bus Rev. September 1, 1999:96-106

You may read the archived Wednesday's Words of Quality 2009-2012, on Internet: <http://www.henryford.com/body.cfm?id=53405>
Intranet: <http://henry.hfhs.org/body.cfm?id=10278>

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Henry Ford Production System LEAN Two-Day Training Program

Feb. 16-17, 2012, Henry Ford Health System, One Ford Place, Detroit, MI

Description

This two-day Henry Ford Production System LEAN training program is a more extensive educational program designed for senior leaders and team leaders. It offers a didactic hands-on approach to LEAN management with development of a leadership and management style that will prepare physicians, administrators and technical support staff for the realities and challenges of culture change and potential successes derived from leveraging an educated, empowered and accountable workforce that leverages PDCA (Plan-Do-Check-Act) for process improvement and more efficient work redesign.

This approach has been very effective in the HFHS Laboratories for the past 6 years and supports the PDCA-based HFHS Model-for-Improvement. This approach to LEAN is based upon Deming's management principles of leading and practicing in a culture that uses manufacturing-based work rules and process improvement tools. These sessions are applicable not just to laboratory medicine but also adaptable to the processes encountered in clinical medicine, administrative, human resource, industrial, manufacturing, housekeeping and dietary services.

Participants will learn the concepts necessary to begin the LEAN Journey as they work on real life issues while applying LEAN principles learned in this class to their work environment This course consists of 14.0 CME hours of education class-time in a 2-day session.

This course is intended for: • Physicians • Nurses • Technologists • Pathologists • Residents • Directors • Managers • Administrators • Quality and Medical Officers

Learning Objectives

Upon completion of this course, the participant will be able to:

- Understand the LEAN philosophy and methodology and how it applies to daily work
- Describe and implement effective process improvements based on manufacturing base production principles of continuous improvement
- Understand rules of work leading to standardization, minimization of variation and enhanced, effective communication
- Select leadership and organizational structures for successful transformation to implement LEAN as a continuously learning, evolving and improving workforce culture
- Adopt unique measurement tools based on the scientific method of data collection (PDCA) to identify and analyze defective processes
- Identify methods used to improve work leveling and pull systems that lead to continuous flow processing
- Analyze key input and output processes as well as information within a value stream to identify value and non-value added activities from the customer's perspective
- Manage empowered teams of 'expert' workers
- Understand how new technology can be adapted to promote and sustain LEAN concepts of work

This course is held in Detroit at the Gilmour Center for Education, One Ford Place and is available by registering at the Continuing Medical Education web site :

www.henryford.com/cmeevents