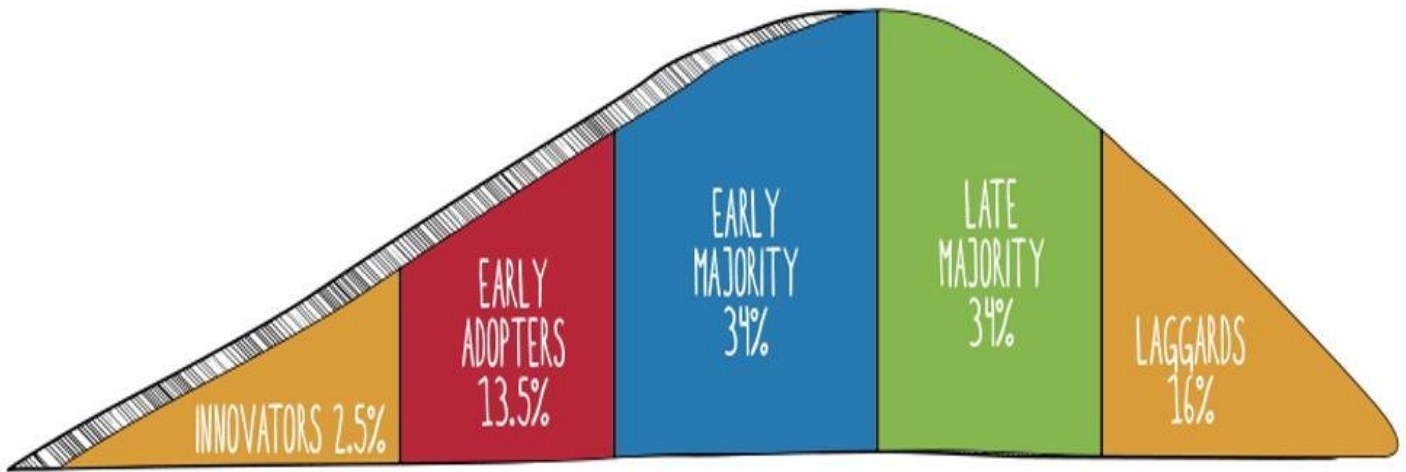




ESSENTIAL MARKETING MODELS [HTTP://BIT.LY/SMARTMODELS](http://bit.ly/smartmodels)



Mark Warren

Experienced Manufacturing Professional "Discovering Solutions with People"

Are you an Innovator or Early Adopter?

June 23, 2017 • 16 Likes • 2 Comments

Are you the sort of person who wants to create rapid measurable results and solve real problems?

All real progress has been made by innovators with a few early adopters that form the nucleus of the small teams that begin to create the substantial change we see in leading innovative organizations.

Today's generation tends to think of people like Steve Job at *Apple* (the 2nd time), Ed Catmull and John Lasseter at *Pixar*, or George Lucas and Steven Spielberg at *Lucas Films*, or Elon Musk with *Tesla* and *SpaceX*.

We may remember people like Taiichi Ohno, the father of the Toyota Production System (lean).

My parents remember people like 'Kelly' Johnson and the Skunk Works (created the P-38 and the U2 spy plane).

My grandparents remembered people like Henry Ford (Model T) and Thomas Edison (light-bulb, record player, movies).

We tend to remember the lead catalyst, but forget it was a team effort that created the success stories.

... no simple list of 10 tools or rules will let you replicate their success...

If Only Thinking...

Are you satisfied with the results of your quality, lean or six sigma programs? Do the results stick? Do they last beyond a few weeks or months? If the surveys are correct, there is a major disconnect between '*looking lean*' or having an active six sigma program with measurable results that translate to the bottom line in terms of cost, quality and delivery.

Our organizations may look cleaner, more organized, more politically correct with our '*respect for people*'... yet our systems still struggle to deliver our products and services without delays, without defects and at a price that a customer considers a reasonable value for what they received.

Despite all the quality, lean and 6-sigma training that has been done, we don't seem to be able to address problems in an effective way to create lasting solutions.

What would happen if you created an environment where experimentation and problem solving thrived?

Some examples below:

Light bulb manufacturer - 1 week



For the first example, let me share with you my experience with a compact florescent light bulb manufacturer. The pilot project selected was for the bulb that is made up of 3 U shaped glass tubes that are heated, bent, coated, then joined before final assembly. There are about a dozen machines the tubes must pass through before becoming a light bulb. Each team was assigned a section of the line to investigate.

At the end of day two the teams summarized their findings of the problems each segment and identified which problem solved would have the biggest impact. Overall, cracking and breaking of the glass tube was the largest contributor to losses. At first they said they were not that concerned, because they always recycled the glass (*they ran the tube making facility as well*). However, when they began to look at the defect as a disruption to flow, which translated into lost production, their opinions changed.

Day three was spent observing all of the locations that cracked or broke the tubes. Ideas were proposed, experiments to test their ideas were developed and a to-do list was handed off to the second shift. On day

four, they confirmed that most of the experiments had worked and the breakage had dropped 70%... the equivalent of an extra hour of production each day!

Motorcycle Plant - 1 Week

Tail light assembly breaking

– New model (18 months old)

- Scrapping about \$5,000 per month after rework
- Had been a QC project for about 6 months
 - Lots of process data, no actions
- Light assembly not capable to tolerances
 - Supplier working to drawing that did not include assembled tolerances
- Mounting bracket process not capable
 - Faulted supplier of subassembly that was welded to frame
 - » Issue with fixture holding subassembly at frame welding
- Third issue discovered in side panel assembly
 - Locating tab irregular
 - » Fixture in robotic welding operation not holding tab tight in place during welding
- Maintenance repaired problem fixtures
- Engineering and Supplier met the next day at the assembly line to see the problems
 - Temporary sorting was developed
 - Assembly process modified
- Rework reduced from average of 130 per day to 4 with temporary measures

Chain Manufacturing Plant - 2 weeks

- **Oil on floor near stamping press**
 - Experiment to wipe oil from strip leaving stamping press
 - 30 minutes cleaning time per shift reduced to 5 minutes
 - Deployed at all presses
- **Machine changeover – deep draw stamping**
 - Experiment with shims to eliminate adjustments
 - 8 hour changeover to less than 5 minutes
- **Mixing of components – found in assembly**
 - Experiment to reduce mixing at critical step
 - 50% improvement. Taking steps to further reduce
- **Low machine OEE on bottleneck process**
 - Found major contributor was absenteeism and supervisor unaware of critical role in plant output
 - Developed plan to staff bottleneck operation even with absences (operators now aware of critical need to keep this process running)

Large Iron Casting operation (5-ton part) - 2 weeks

- **Casting porosity – can be detected only after final machining**
 - Engineering claimed solution could only be determined if they could a special modeling software to identify cause.
 - Go see, observe, get facts...
 - Critical placing of “chillers” in the mold was highly irregular
 - » JBS developed
 - » Operators trained
 - Porosity failures reduced about 80%

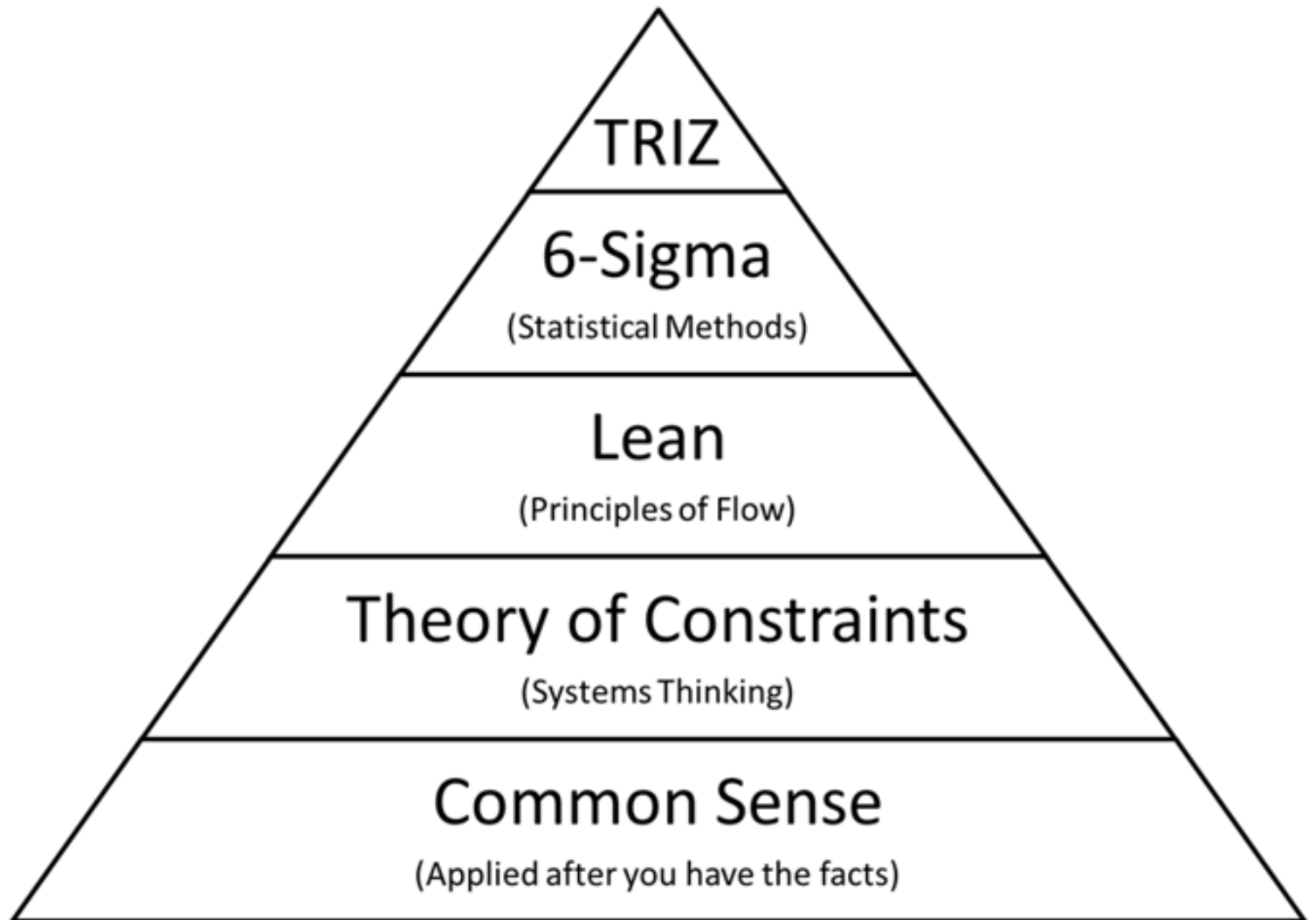
Automotive Component Manufacturer - 2 weeks

- Oil pump assembly
 - Parts machined, assembled and tested
 - Demand 500 per day
 - Current production is 280-350 per day (working 3 shifts – they work weekends and still can't keep up)
 - Manufacturing Engineering solution - \$300,000 machining center ordered
 - Fact finding:
 - » Current machine sometimes idle
 - Supplier problems and internal receiving
 - Improved supplier communication – supplier to inspect critical areas where defects were found after machining
 - Internal inspection process modified to remove delays
 - Fixture defects repaired to eliminate scrap caused by fixture
 - Transfer process to assembly in smaller batches
 - Modified testing sequence to increase capacity
 - » Results: 500 per day achieved on two shifts, no weekend overtime

These were not '*kaizen events*', but practice sessions to develop *team problem solving skills*. The teams consisted of team leaders, supervisors and managers. All of these facilities had active lean and 6-sigma programs. On the surface, they '*look lean*' and track all the KPI's you would expect to see, however the teams managed to find and resolve issues that had plagued them for so long, they had been accepted as part of the process.

It's not rocket science, they start with getting the facts.

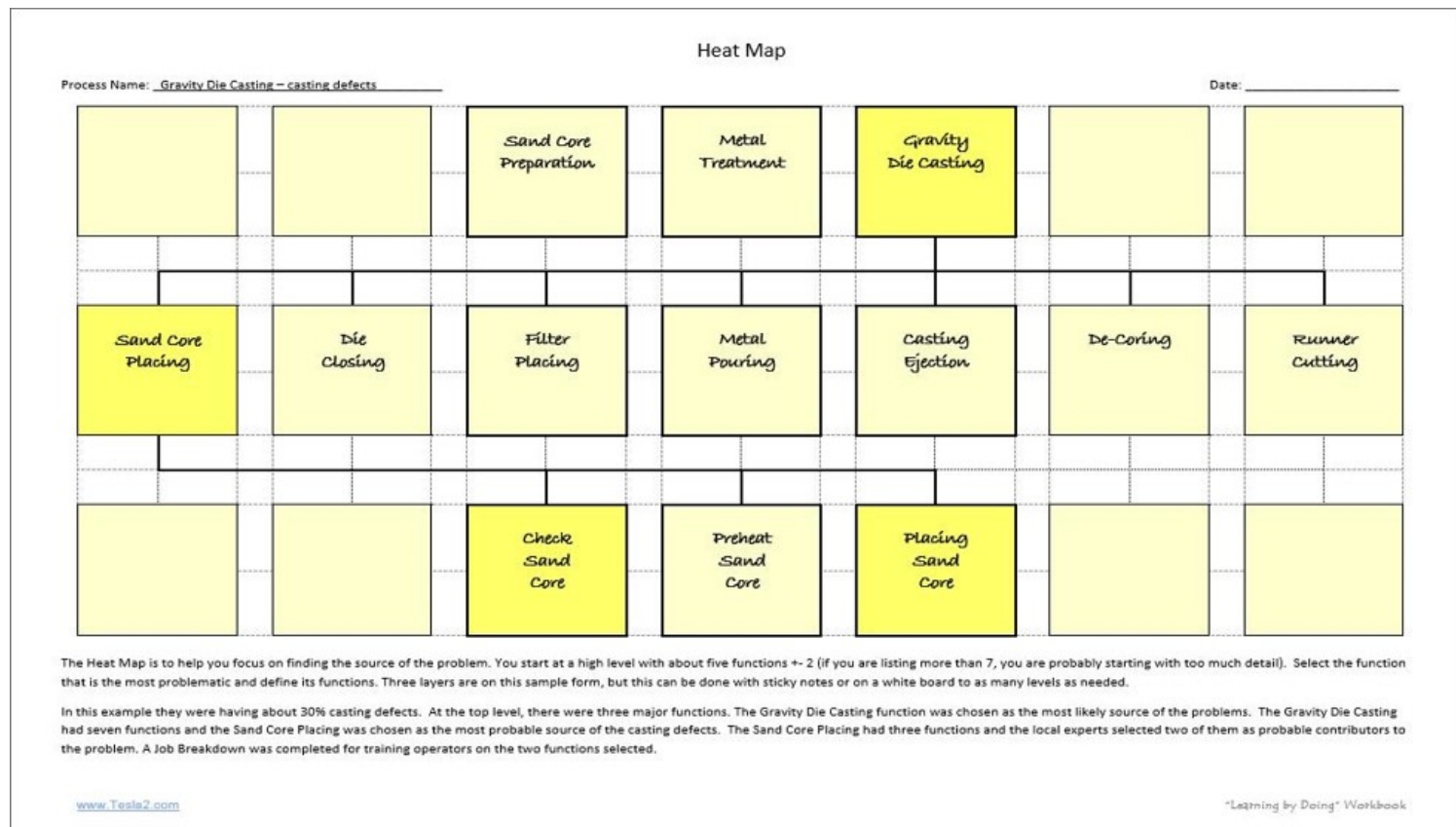
Problem Solving Methods



Sequence of use: start at the bottom and work your way up.

Strive for a solution as simple as possible, but no simpler. ~ Einstein

The team selects a problem that they think will make a difference...



They follow a structured process through the first three layers of the pyramid... and resolve more than 80% of their problems as they practice their problem solving skills. The more they practice, the faster they are with creating the structure and stability in the production system. 6-sigma is best used on improving processes that already have 4-sigma capability.

The secret is deliberate practice of the skills with the help of a coach:

PROBLEM SOLVING
DETERMINE OBJECTIVES

STEP 1 - GET THE FACTS
See for yourself, first-hand information. Review the records. What policies, rules, and regulations apply?
Talk with all individuals concerned and get opinions and feelings.
Be sure you have the whole story

STEP 2 - WEIGH AND DECIDE
Fit the facts together and consider their bearing on each other.
What possible actions are there?(3 minimum)
Check each action against objectives weighing effect on individual, group, and production. Select the best actions.
Fill out Action Sheet for planning.
Don't jump to conclusions

STEP 3 - TAKE ACTION
Should I handle this myself or involve my manager? Who else can help in handling?
Consider proper time and place. Immediate action is preferred.
Explain and get acceptance.
Don't pass the buck

STEP 4 - FOLLOW UP ON RESULTS
How soon and how often will I check?
Watch for changes in output, attitudes, and relationships.
Did my actions help production?

WERE OBJECTIVES ACCOMPLISHED?

"Problem Discovery"

1. Go to the Workplace regularly
Avoid Surprises
Do not work from memory.
2. Observe
Check for MUDA, MURA, MURI
More than one sample.
Be patient, use all of your senses to observe, not just your eyes.
3. Question
Develop understanding, not blame.
5-Whys to discover root causes.
Look for patterns, abnormalities.
4. Get the Facts
Validation process using F.O.G.
(Fact - Opinion - Guess).
Experiment to validate guesses
Is the fact useful to make a decision?
5. Classify Problems- People/process
Use templates to organize the facts collected.



First set of practice exercises

JOB INSTRUCTION How to Get Ready to Instruct	JOB INSTRUCTION HOW TO INSTRUCT
Before instructing people on how to do a job: 1. HAVE AN ACTIVITY SHEET Define objective: - Who is to be trained ... - What skill is to be trained ... - When training is to be completed ... 2. BREAK DOWN THE JOB - List Important Steps - Pick out Key Points and Reasons - Safety is always a Key Point - Define Coaching Units 3. HAVE EVERYTHING READY Have the right equipment, tools, materials, and supplies. - Everything needed to instruct. 4. ARRANGE THE WORK AREA Just as in actual working conditions and how the employee is expected to keep it.	STEP 1 - PREPARE THE LEARNER - Put the person at ease - State the job - Find out what the person already knows - Get the person interested in learning the job - Put the person in correct position STEP 2 - PRESENT THE OPERATION - Tell, show and illustrate - one IMPORTANT STEP at a time - Do it again - Stress KEY POINTS and REASONS - Instruct clearly, completely, and patiently giving no more than they can master at one time STEP 3 - TRY OUT PERFORMANCE - Have the person do the job - stating IMPORTANT STEPS - correct for errors - Have the person do the job again - exploring KEY POINTS and REASONS - Make sure the person understands - Continue until YOU know THEY know STEP 4 - FOLLOW UP - Put the person on their own - Designate to whom they go to for help - Check frequently - Encourage questions - Taper off extra coaching and close follow-up IF THE PERSON HASN'T LEARNED, THE INSTRUCTOR HASN'T TAUGHT



Second set of practice exercises

How to Improve JOB METHODS	
Step 1 - BREAK DOWN the job. - List the Activities of the job. - List Snags and Difficulties for each Activity - Delays, awkward movement, distance to walk, dangers, unpleasant task, quality, wastes, etc. - Be sure Activity includes: - Material Handling, Machine and Hand Work, Delay, Inspection, Transport, and Storage. Step 2 - SELECT a key activity to IMPROVE. - Get the Facts to better understand - Purpose: WHAT is achieved? WHY is it necessary? - Place: WHERE is it done? WHY there? - Sequence: WHEN is it done? WHY then? - Person: WHO does it? WHY that person? - Means: HOW is it done? WHY that way? Step 3 - CHALLENGE the key activity. - WHY is it necessary? - Remove unnecessary activities - Purpose: WHAT else COULD be done? - Place: WHERE else COULD it be done? - Sequence: WHEN else COULD it be done? - Person: WHO else COULD do it? - Means: HOW else COULD it be done? Note ideas for each key activity Record ideas on Challenge Sheet	Step 4 - DEVELOP ideas (min. 3) - ELEMENTATE unnecessary details - COMBINE details when practical - REARRANGE for better sequence - SIMPLIFY all necessary details Use your ideas for all key activities. Make the work easier and safer. - Pre-position materials, tools, and equipment at the best places in the proper work area. - Use gravity-feed hoppers and drop-delivery chutes. - Let both hands do useful work. (Legs too.) - Use jigs and fixtures instead of hands for holding work. - Work out your idea with others. - Design experiments to test ideas - Test new method to validate, if it does not meet objectives, develop a better idea. - Write up your proposed new method. Step 5 - APPLY the new method. - Sell your proposal to your manager. - Sell the new method to the operators. - Get final approval of all concerned on Safety, Quality, Quantity, and Cost. - Put new method to work by training people on new method. - Give credit where credit is due



Third set of practice exercises

Management Follow Up A Leader Gets Results through People	Management Follow Up DETERMINE OBJECTIVES
FOUNDATIONS FOR GOOD RELATIONS - Let Each Employee Know How they are Getting Along - Figure out and tell the person what you expect. - Point out ways to improve. - Give Credit When Due - Recognize extra or unusual performance. - Tell the person while it's fresh. - Tell People About Changes that Will Affect Them - Tell them WHY if possible. - Get the person to accept the change. - Make Best Use of Each Person's Ability - Look for abilities not now being used. - Never stand in an employee's way. People Must Be Treated As Individuals	STEP 1 - Define Problems Identify area - People / Process Have Leader identify weak skills of people Have Leader identify process problems STEP 2 - Jointly Set Weekly Goals Manager and Leader select priorities, make it a part of your regular work. Agree on facts of actual conditions. Agree on objectives for each task. Define weekly goals for each task. STEP 3 - Provide Resources and Coaching Jointly determine where the Leader needs coaching support to accomplish goals. Are any external resources needed? Check frequently, not just weekly review. STEP 4 - Record Results What actually happened? What did you expect? What did you learn? STEP 5 - Review Results and Goals Use facts to evaluate training effectiveness. Review facts on process experiments. Are there any barriers you need to remove? Review lessons learned, discuss next steps to be taken and define new goals. WERE OBJECTIVES ACCOMPLISHED?



Coaching exercise

• (Karate Kid movie images are owned by Columbia Pictures Industries, Inc.)

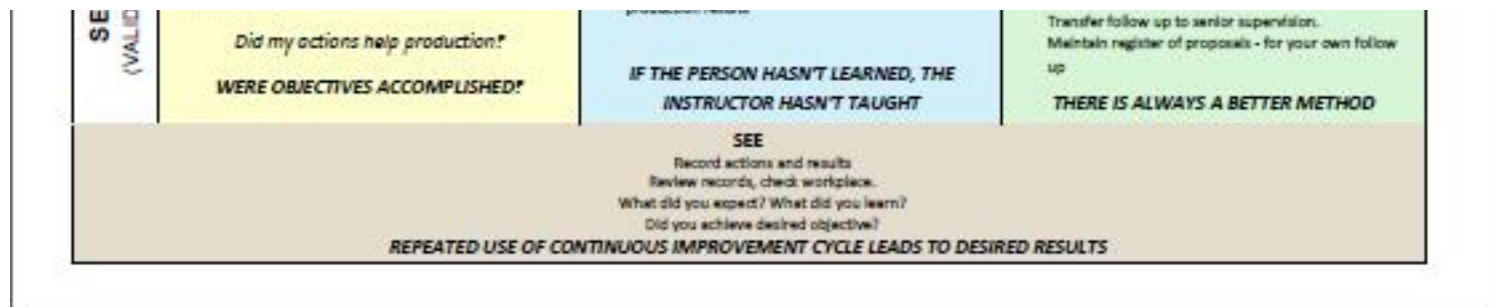


ible to create the solution

There are many paths to the top of the mountain, some are more difficult than others.

PROBLEM SOLVING PROCESS

SELECT OBJECTIVE TO ACCOMPLISH			
PLAN	Identify the problems associated with the objectives Use problem discovery steps. Discuss the problem with all concerned Decide Approach to each problem Use Guidelines: Barriers: Yellow card. Skill Deficit: Blue card. Process Snag: Green card. Set follow on assignments. Fix completion and review dates. Be firm on deadlines.	DO	Deal with one problem at a time Start immediate action Coach; offer suggestions if needed Provide resources, assistance and permission where and when needed
Problem Discovery – Select a Problem			
1. GO TO THE WORKPLACE REGULARLY Avoid Surprises Do not work from memory. 2. OBSERVE Be patient, use all of your senses to observe, not just your eyes. (More than one sample.) Check for Scrap, breakages, damages, stock write offs, stock holdings, rejects, rework, production targets, holdups, bottlenecks, morale, lack of communication, customer complaints, product returns. 3. QUESTION Talk to people concerned, get opinions, develop understanding, never blame. Discover possible Impacts – Safety, Quality, Quantity, Cost		4. RECORD THE FACTS Validation process using F.O.G. Experiment to validate guesses. Capture all details revealed. Is the fact relevant to the problem? 5. CLASSIFY AND STATE PROBLEMS People – skills, attitude Method – process, machine, materials, layout flow, suppliers. List out all the problems you see with evidence. Arrange in easily understandable way. Avoid too much of information. NO PROBLEM, IS A PROBLEM	
SELECT APPROACH			
PLAN (PREPARE)	Barriers, Relations issues, Ad Hoc issues, uncertain cause DETERMINE OBJECTIVES GET AND ANALYZE THE FACTS See for yourself, first-hand Information. Review the records. Select manageable problem bit. Collect general and specific information; isolate and examine critical facts. What policies, rules, and regulations apply? Fit the facts together and consider their bearing on each other. Identify all possible root causes Talk with all individuals concerned and get opinions, feelings and advice. Be sure you have the whole story WEIGH POSSIBLE ACTIONS and DECIDE What possible actions can be taken? (minimum of 3 options suggested) Check if actions are possible, practical and immediately implementable. Consider temporary countermeasures as well as long term solutions. Check each action's impact against objectives; weighing effect on individual, group, and production. Select all required actions to be done. Check if instruction or method change is needed. List out steps and details for each action. Don't jump to conclusions	Skill deficit, Nonstandard work methods GET READY TO INSTRUCT 1. Prepare the Workplace a. Get specific tools, materials, equipment b. Arrange for best efficiency 2. Prepare yourself a. Plan the instruction – Check out New Appointment, Transfer, Temporary absences, Resignations, Promotions, Accidents, Mistakes, Damage, Damage to equipment, Excessive time taken, Low output, Attitudes – Who is to be trained, in what skill, by what date b. Breakdown the job for instruction – Breakdown into coaching units – List important steps – List the key points and reasons for each step – Use the help of experienced workers c. Do a dry run first, ensure you can do and explain the job correctly 3. Prepare the Learner a. Put him at ease b. State job, learn his experience, interest him in learning c. Explain use of tools, equipment, safeguards, etc. d. Position learner for learning	Process snags, unstable process ANALYZE AND RECORD Select appropriate unit, Watch the job being done, list all details Material Handling, Machine and Hand Work, Delay, Inspection, Transport, and Storage Note snags and difficulties. Delays, Awkward Movement, Distance to Walk, Dangers, Unpleasant Task, Quality, Waste, etc. Select Key Activities to Improve UNDERSTAND & CHALLENGE EACH KEY ACTIVITY Why is it done? Is it necessary? When – Where – Who – How is it done? Why that way? Is there a better way? Note all ideas. Use aids below Question snags and difficulties with a view to their elimination. Get full appreciation of present method. Note all ideas for each key activity on <u>Challenge Sheet</u> USE THESE AIDS SAFETY: Is it the safest method? Does it conform to safety rules? EQUIPMENT: Is your equipment correct, fully used, and in good working condition? Is other equipment available within the organization? Can holding devices be used? Can gravity aids help? LAYOUT: Is space being used to advantage? Is everything in the convenient work area? Can both hands do useful work? MATERIALS: Can better, less expensive or less scarce materials be used? Can scrap or waste be reduced or used for another job? DESIGN: Could improvement be obtained by alteration of design of product or equipment? PAPERWORK: Could duplications of work be reduced? Can sorting, summarizing, recording, copying, checking, be reduced or simplified? Can the design of the form be improved? HOUSEKEEPING: Are working and storage areas are clean and orderly? Is junk taking up space that could be used for productive work? Are necessary things in proper place? Always enlist the help of those doing the job. Work out your ideas with others.
	DO (EXECUTE)	TAKE ACTION Work on countermeasures and long term solutions. Should I handle this myself or request help? (Who else can help in handling problem?) Consider proper time and place. Immediate action is preferred. Explain and get acceptance of all concerned. Don't delay or pass the buck	INSTRUCT THE LEARNER 1. Instruct Tell, show, illustrate one step at a time, Stress key points with reasons, test understanding Try out learner's performance Have him do the job Have him repeat, Telling what he is showing, stressing key points with reasons, test understanding with Why - questions 3. Put him on his own Stress quality and safety Encourage questions about the job Tell him who to ask for help
E (EVALUATE)	FOLLOW UP ON RESULTS How soon and how often will I check? Watch for changes in output, attitudes, and relationships.	CHECK AND EVALUATE RESULTS 1. Assess performance of trainee 2. Check for conformance to safety, quality, quantity 3. Inform all concerned regarding practice and production results	INSTALL AND MAINTAIN NEW METHOD Submit for approval: Safety, Quality, Quantity, Cost. Convince and train users. Check results, give credit



Do you want to be one of the innovators or early adopters that create the changes that become the new norms?

The traditional consulting model is one of billing thousands \$\$\$ per day while the client is watching the billing clock and worrying about ROI results. It is nearly impossible to get results like those posted above if you are watching the clock or have a budget constraint.

The traditional consulting model is broken... the barriers are time and money...

The consultant's trap:

"If you ask for the price that you are worth, then they can't afford it. If you sell yourself below value, then they won't value you." - Christoph Roser

How I want to change the model:

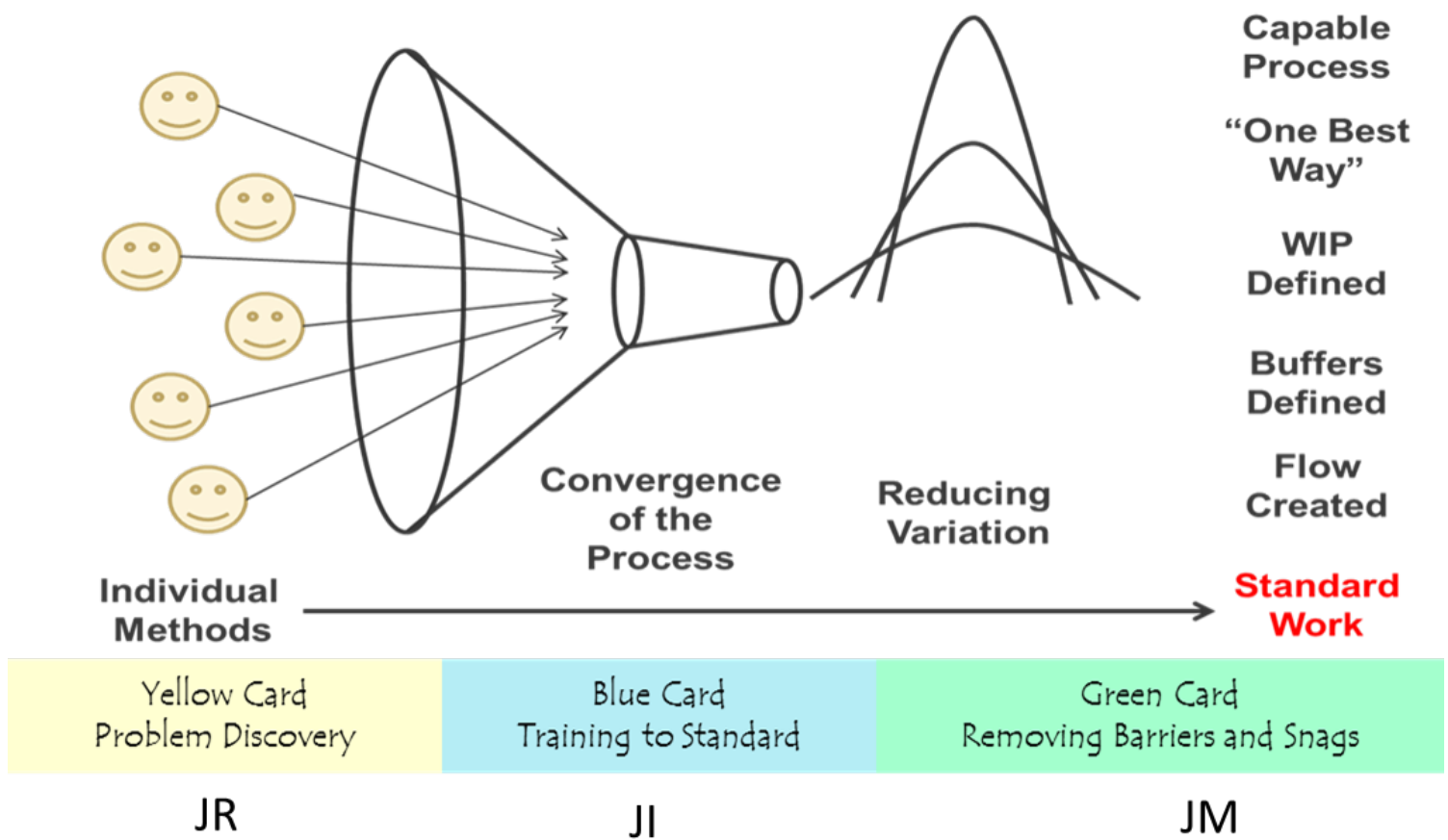
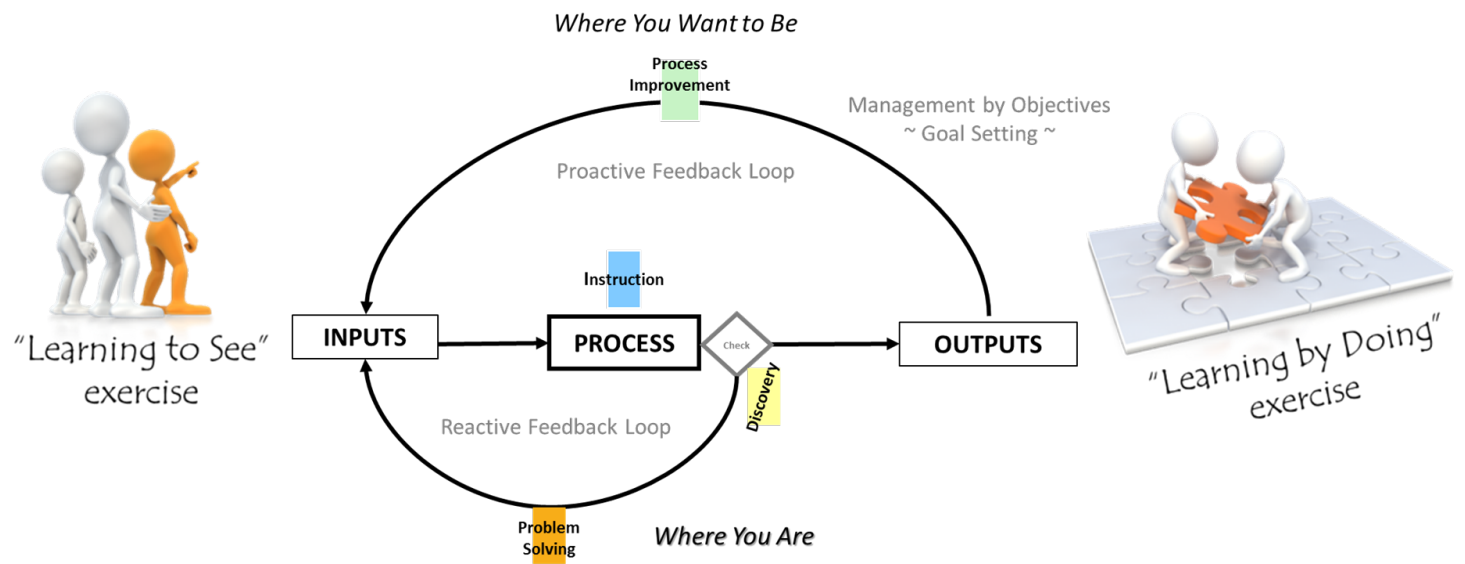
After 40+ years working in industry around the world, I'm retiring from the traditional consulting format to focus on helping people first... where the focus will be on developing skills as they learn by doing and create results.

I am aware that the minimum coaching contact time to create skills to level where they are mastered, takes about 10 weeks. This is too disruptive for the smaller companies, so I have settled on a two week coaching program.

The current outline of the program starts with an introduction to the skills that we will use and the *objective of creating flow*. The company group will consist of people from leadership positions (team leader, supervisor, or manager). I will start with the overview of lean and TWI skills, then divide the people into three teams of about 5 (+-2). My objective is to create a large user base that would be capable of coaching others on what they learn. For international locations, there should be at least 1-2 people on the team that speak English (enough to understand me). The members of the team must commit to 2 hours of coaching each day and at least 2 hours of additional time to work on projects as part of the *Learning by Doing* workshop. To create sustainability, it is recommended that one person from these teams, or someone that is a trainer be designated to learn the coordinator skills (coaching and follow-up).

(For 300-500+ employee companies, the team targets should be should be in the million \$ range on an annual basis. Teams should target 50% change, but orders of magnitude improvement in the cost/quality/delivery are possible.)

Interested enough to apply? Contact Mark Warren (mark.tesla2@gmail.com)



Written by



Mark Warren

Experienced Manufacturing Professional "Discovering Solutions with People"

2 comments

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Franck Vermet

Manufacturing Excellence Leader

... 5mo

Mark, I am surprised to see you primarily mention quality related breakthrough improvements. I remember hiring you when I had the luxury of having a \$\$\$ consultant in the oilfield equipment manufacturing business in 2011: our Big Hairy Aggressive Goal was to multiply the capacity of the bottleneck department (inspection) by a factor of 5 in one month. You were the coach, I was the innovator and we made it!

That is the business side, but the biggest hit was to have developed improvement junkies, so addicted to daily experiments, that even I, as the manager, had a hard time catching up with them. By simplifying people's life we improved performance.

Like **Reply** | **2 Likes** · **1 Reply**



Mark Warren

Experienced Manufacturing Professional...

5mo

Franck, Thanks for posting another example.

The biggest reward for me was the 'ah-ha' moments when the people began to realize that they could solve the problems themselves and improve their own satisfaction with what they could accomplish. The growth of personal confidence was contagious across the team.

One event on particular sticks out in my memory. When I arrived at 8 am one morning, the team had borrowed a forklift, removed all the equipment, reorganized the layout from the day before, and were back at work. Even with the time spend changing the layout, they exceeded the goals for the day.

Like **Reply**