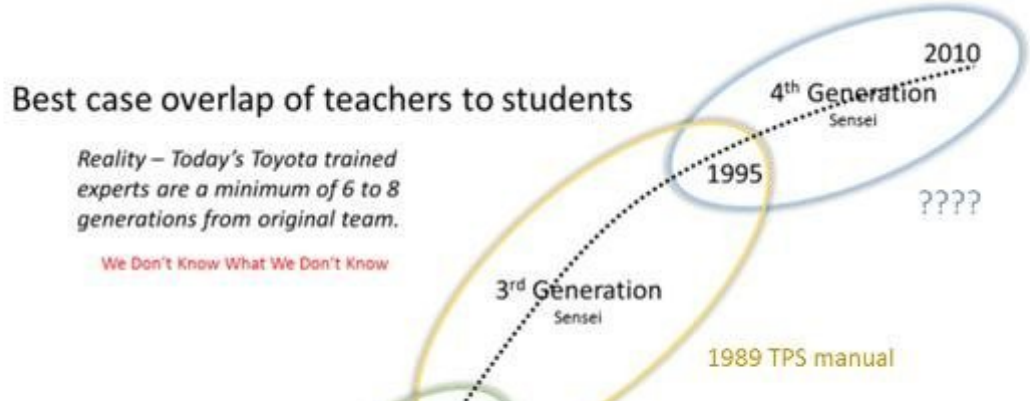


Mark Warren
Experienced Manufacturing Professional "Discovering Solutions with People"

Ohno's Secrets - Part 2

July 4, 2017 • 50 Likes • 7 Comments

My Journey continues - The Tipping Points

My primary guideline for research and fact finding is to get as close to the original source as possible. Whenever I found a *'Lean'* or Toyota Production System (TPS) source, I closely reviewed the materials looking for more links to their sources. Each book or article they referenced became additions to my reading list. By getting closer to the source, the story of lean and its origins began to change; a new picture emerged.

Tipping Point #1: Learning about TWI

References to TWI (Training Within Industry) were not always clear or obvious. I don't remember my original source, but here are a few: Masaaki Imai's "*Kaizen*" (short mention, pg. 112, 1986); Kiyoshi Suzaki's "*The New Shop Floor Management*" (description of JI, pgs. 367-371, 1993); Mike Rother and John Shook's "*Learning to See*" (calls their example TWI Industries, 1999); various articles on the training programs that Toyota used to start up the NUMMI operation. (At this point, I did not know that Toyota, Nissan and Honda had their own versions of the Job Instruction program.)

About the time I met David Meier, one of the MEP (Manufacturing Extension Partnership) organizations began selling TWI training. Even though all the TWI materials were in the public domain (since they were originally developed by the US government), the two locations in the world where you could get training, closely guarded the training manuals. To get a copy, you had to enroll in their week long "*Train the Trainer*" program (about $5,000 for each of the programs).

David mentioned that he had found original copies of the delivery manuals in a major library. He also introduced me to a small group that was also searching for any TWI related materials, who also freely shared what they had found. [1] It did not take long to acquire copies of the original delivery manuals, plus a bonus book "*The TWI Report*". This was written by the original group and detailed the development of the programs. Over time, I accessed their original records (more than one hundred boxes at the national archives). Since David had worked at Toyota, he was the only one of us that had experience delivering the TWI training, [2] and was very patient in answering my endless questions. As an engineer, Job Methods (JM) immediately became my favorite TWI program.

Tipping Point #2: The Shingo Problem

After reading thousands of pages of TWI materials, the intent of the skills training began to connect to much of the Toyota practice… like the "*Respect for People*" principle. There were also differences, like Shingo's interpretation of the *5W1H* question set used in Job Methods. This indicated that Shingo probably was not trained in the TWI skills; this would be unusual if Shingo was central to the development of TPS.

To make sure that this was not a mistake, I reread Shingo's Green Book released by Norman Bodek, and found an earlier translation of the same book by the Japan Management Association. Admittedly, the second translation, (Bodek's) was easier to read, but it was about 100 pages shorter. A critical conclusion was gained from comparing both translations. Gaps between the different translations opened the door or the possibility that what was being presented might not be accurate. The newer translation would be necessary to successfully promote Shingo in the US… there were too many references by Shingo how his SMED system was critical to creating TPS. This also reinforced that it was unlikely that he had TWI training.

Questioning on a news group whether Shingo had been part of the development of TPS or not, created an immediate series of attacks. Several years later, Art Smalley released an article of an interview with Isao Kato that detailed Shingo's role at Toyota. This cleared up the claims surrounding Shingo and Toyota. While Shingo rarely had any exposure to the shop floor, we should recognize his contribution. The first would be his teaching of the '***P-Course***'[4] which trained of scores of people on basic IE skills - time study - critical to creating standard work. The second would be the codifying of the setup reduction process. His insight to speed up the improvement process with sorting the individual details into '*inside*' or '*outside*' designations as a first step, should be considered a breakthrough. The rest of the Shingo myth was a brilliant marketing construct to sell more books.

Tipping Point #3: John Shook's Challenge

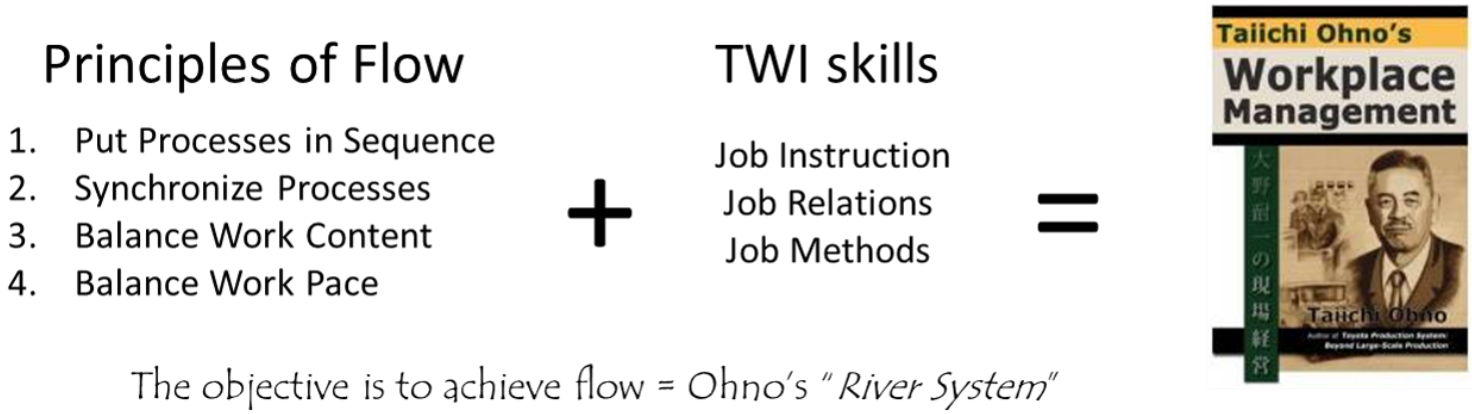
What did Ohno do differently with TWI?

Developer of Toyota's Production System **(LEAN)**

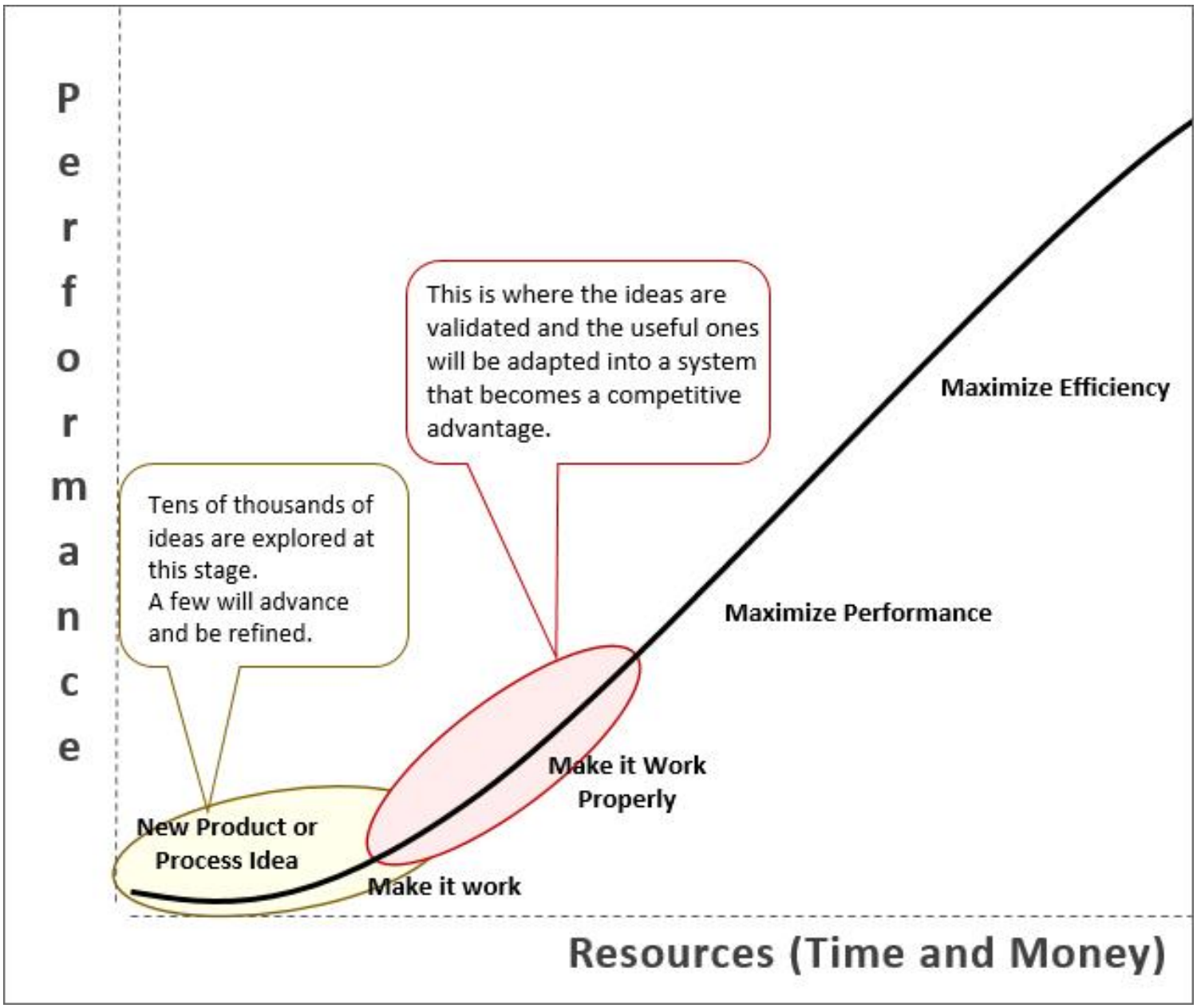
John Shook, Toyota's first American employee

About a decade ago, after a long conversation about Toyota and the TWI programs with John Shook, he

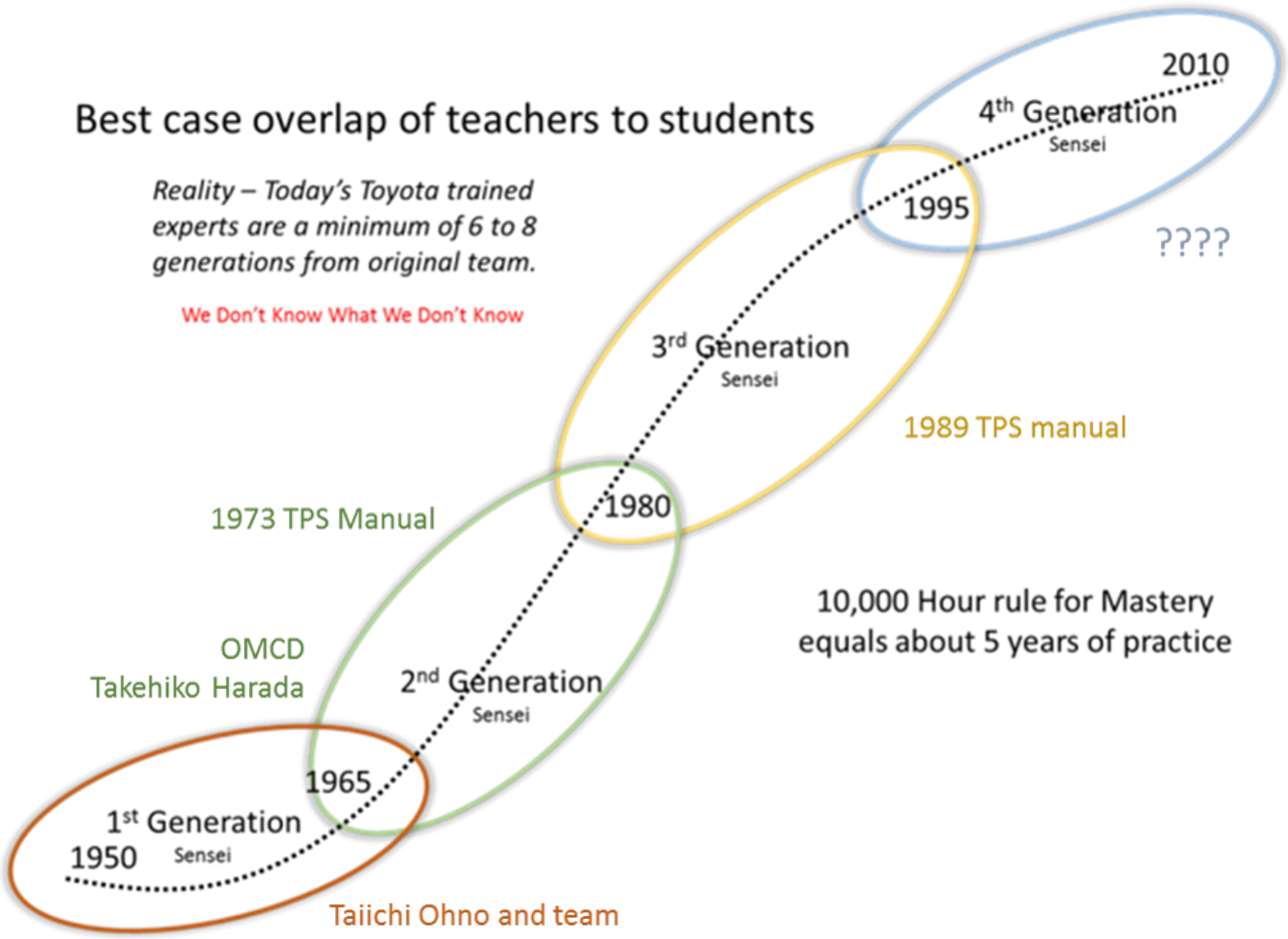
challenged me to understand what Taiichi Ohno did differently than the tens of thousands of other companies that used the TWI programs. Following this challenge, I began to concentrate on understanding the first principles that Ohno had pursued. This was done through an iterative process of asking why (5-Whys), experimenting to validate ideas or information, then returning to ask the next layer of questions.



Ohno and his team iteratively created most of their production system between 1951 and about 1967. There development process follows normal idea development, the '*Technology S Curve*'. You start with an idea and some existing materials and make it work. Then iterate to make it work properly. This was repeated thousands of times to create functional segments, which were then combined to create a functional system. The knowledge base of the ***System Developers*** (Ohno and team) would be far broader and deeper than someone trained to maintain their system. They understood why each countermeasure tool was developed, in addition to what it was to be applied to and how to effectively use the tool.

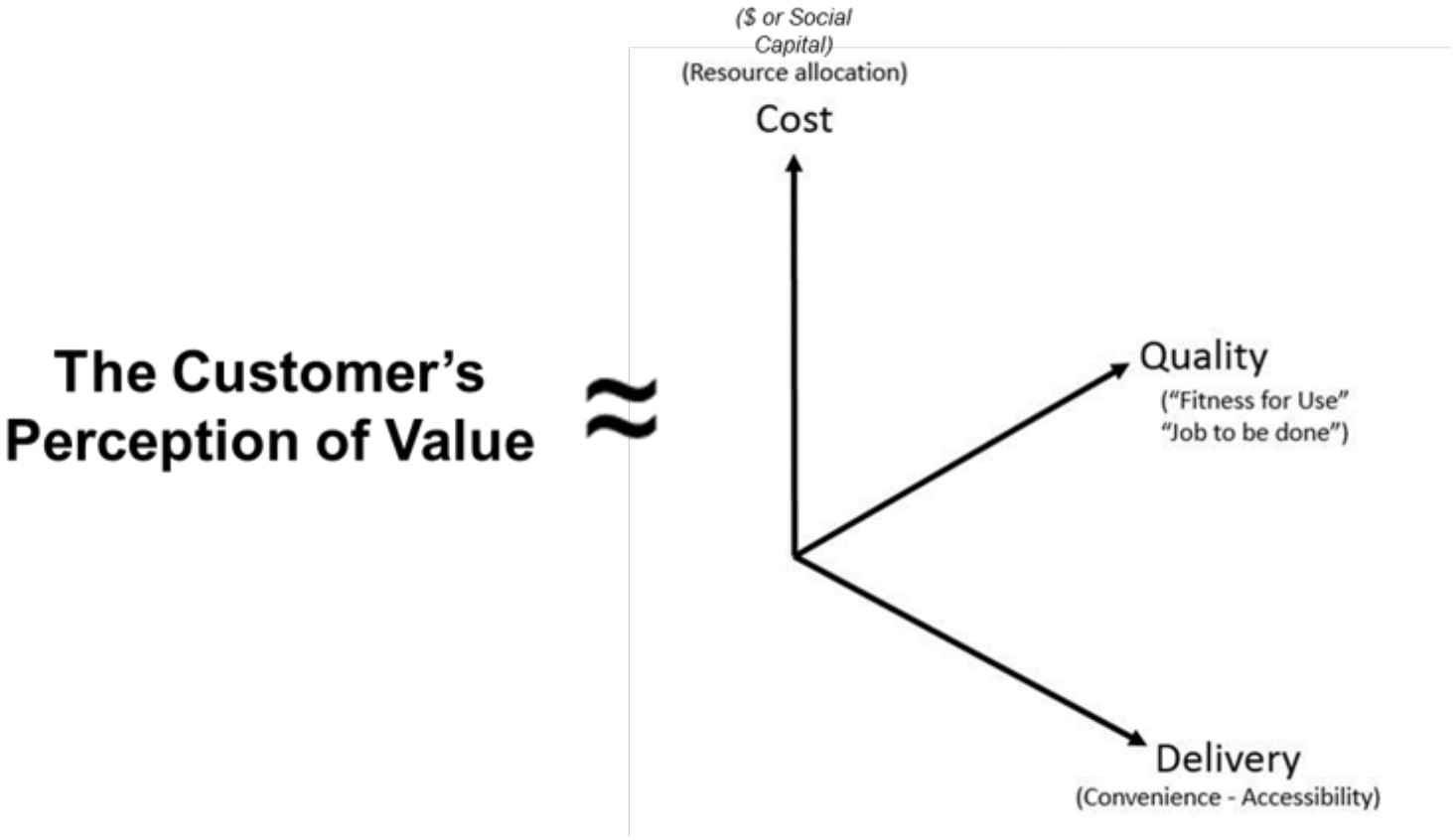


Tipping Point #4: Degrees of Separation between the *'self-proclaimed-experts'* and Ohno's original team



Once we have defined a difference between the knowledge base of the ***System Developers*** (1st generation) and the ***Primary Learners*** (2nd generation+) that were inside the Toyota facilities, it becomes easier to identify the ***Secondary Learners*** (External) and ***Tertiary Learners*** (Observers).

A close examination of the materials used by Ohno in the developmental period between 1951 and 1967 will reveal subtle differences in each generation's understanding of TPS. What it took to experiment and develop a system is far different than what it takes to apply tested models. The best available reference book from the second generation of Toyota experts would be Takehiko Harada's "*Management Lessons from Taiichi Ohno*". He became a manager in Toyota's internal consulting unit - **OMCD** (**O**perations **M**anagement **C**onsulting **D**ivision). This is one of the few books that repeatedly makes the point of *flow* being the primary objective. The 1973 TPS manual may a bit harder to locate, and is quite different than the 1987 version issued by Toyota. The ***System Developers*** teach the ***Primary Learners*** how to run (maintain) the system, who then teach the next generation, etc. Each generation may get better at explaining the '*what*' and '*how*' of the lean tools, but the '*why*' each tool was developed as a necessary countermeasure, fades with each generation of Toyota experts.



Put yourself in Toyota's shoes… by the late 1960's you have a stable system that runs rather efficiently, it is your *supply chain* that is now causing most of your disruptions to flow.

It is time to take what you have learned to your Tier 1 suppliers. They have become the largest source of your disruptions - late deliveries cause stations to wait on parts, quality issues cause containment actions like sorting, rework and returns… all disrupt your ability to deliver and add to the cost of your product.

Think about how you would take what you learned over the years to your suppliers. You might decide to start with something you learned in your third year, or even tenth year. *The learner sees it as the first action step!* Let's look at where most companies start; **5-S**. The first '***S'*** comes from Step 3 in Job Methods (testing for proof of necessity – removing unnecessary items and process steps). The second '**S'** comes from Step 3 (have everything ready) and Step 4 (arrange the work area) in Job Instruction. *How would they know you were starting in the middle to quickly get results?*

Toyota's Supplier Development initiative by OMCD began in 1970 with the training of seventeen of their supplier companies, these were the first wave of ***Secondary Learners***. [3] The logical first steps would probably be directed at the quality issues which would require some basic structure (Job Instruction) to begin to create some stability. When the processes were stable enough (about +-5%), then they could direct the supplier on setting up the Kanban system to improve delivery reliability. Even after several years of training and practice, for the supplier to think that they had learned the whole system would be delusional at best.

Again, Art Smalley and Isao Kato are my best source for accurate information surrounding the early stages of the OMCD supplier connections - see pages 12-14 in the book, *"Toyota Kaizen Methods: Six Steps to Improvement"*. At the time the '*self study groups'* were started at the suppliers, there were no written documents describing how the system worked (except for some kaizen activity materials), you just had an experienced coach to help apply the tools that were needed to solve your (supplier) problems (*that affected*

Toyota). Duplication of TPS was experimental and Toyota learned from these suppliers enough to start a structured implementation process at their Tier 1 suppliers. (*The first structured TPS implementation guidelines were completed near the end of 1976.*)

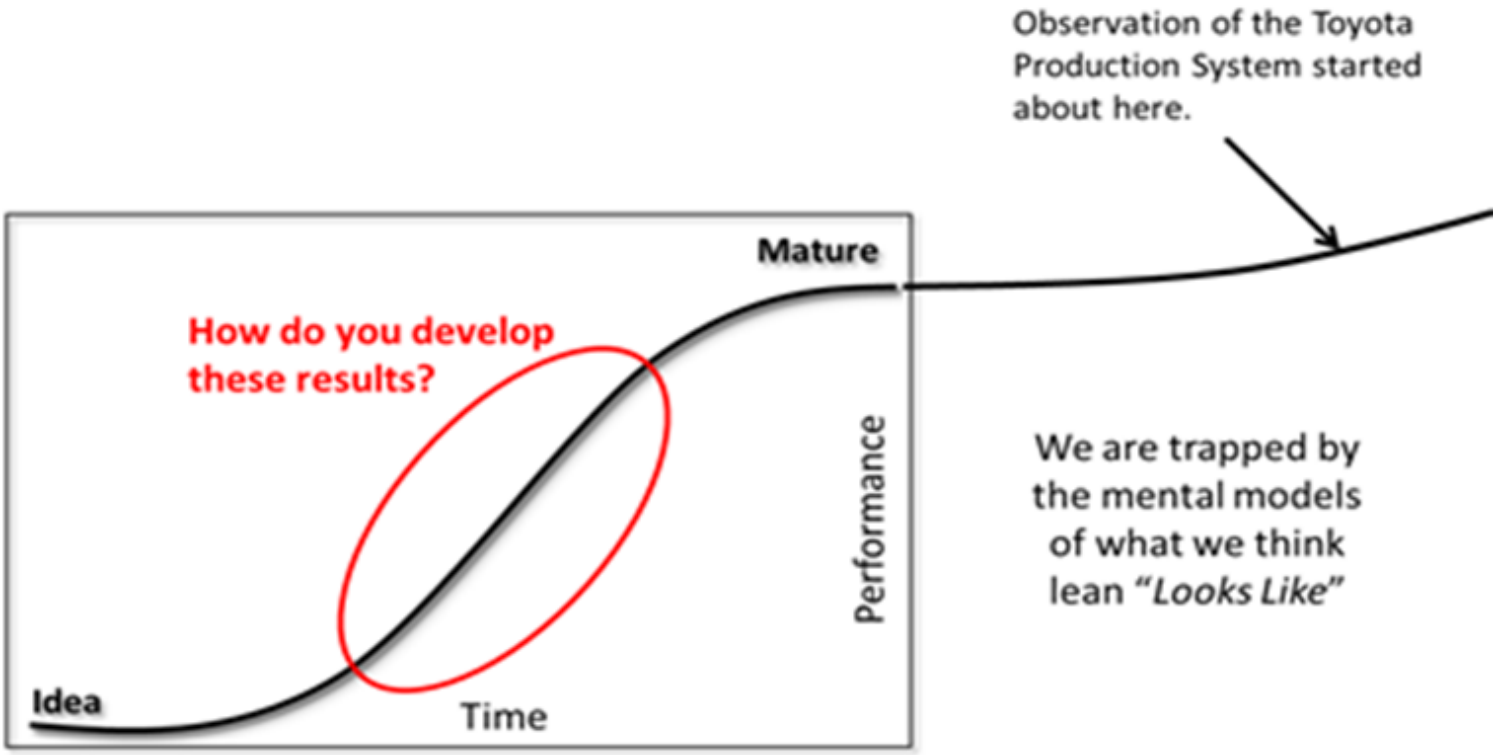
It would be *counter-factual* for any of the participants in the early study groups to claim that they participated in developing TPS, or that they were mentored directly by Taiichi Ohno. Isao Kato states that Ohno had only limited participation with these groups. The only credit that they can take is one of being the experimental facilities where Toyota could observe their learning curve over a shorter period - a few years vs. decades; what training created the best results and what would be the best sequence of implementation for the training.

There are differences in how TPS or '*lean*' is explained by the various generations of *Primary Learners* at Toyota; then the *Secondary Learners*, like the early '*self study group*' leaders and later OMCD students; last, we have the *Tertiary Learners*, the external observers and interpreters of what they thought they saw in Japan. This alone could help explain why so many organizations have such a difficult time '*looking like*' Toyota and getting useful results that translate to the bottom line with performance metrics to the customer constantly improving.

The ***Tertiary Learners*** (Observers) is a general 'catch-all' for the industrial tourists. The best writers that could explain '*lean*' were not the people that had experience on the shop floor; conversely the best practitioners were not the academics, reporters, marketers, etc., who were good at selling or promoting lean and TPS as a service. Consequently, most of what we know about lean or TPS, we have learned primarily from people who have no first-hand knowledge of Toyota, or significant shop floor experience.

> What do you think the effect of several degrees of separation from the true source has on our collective understanding of lean?

More questions…

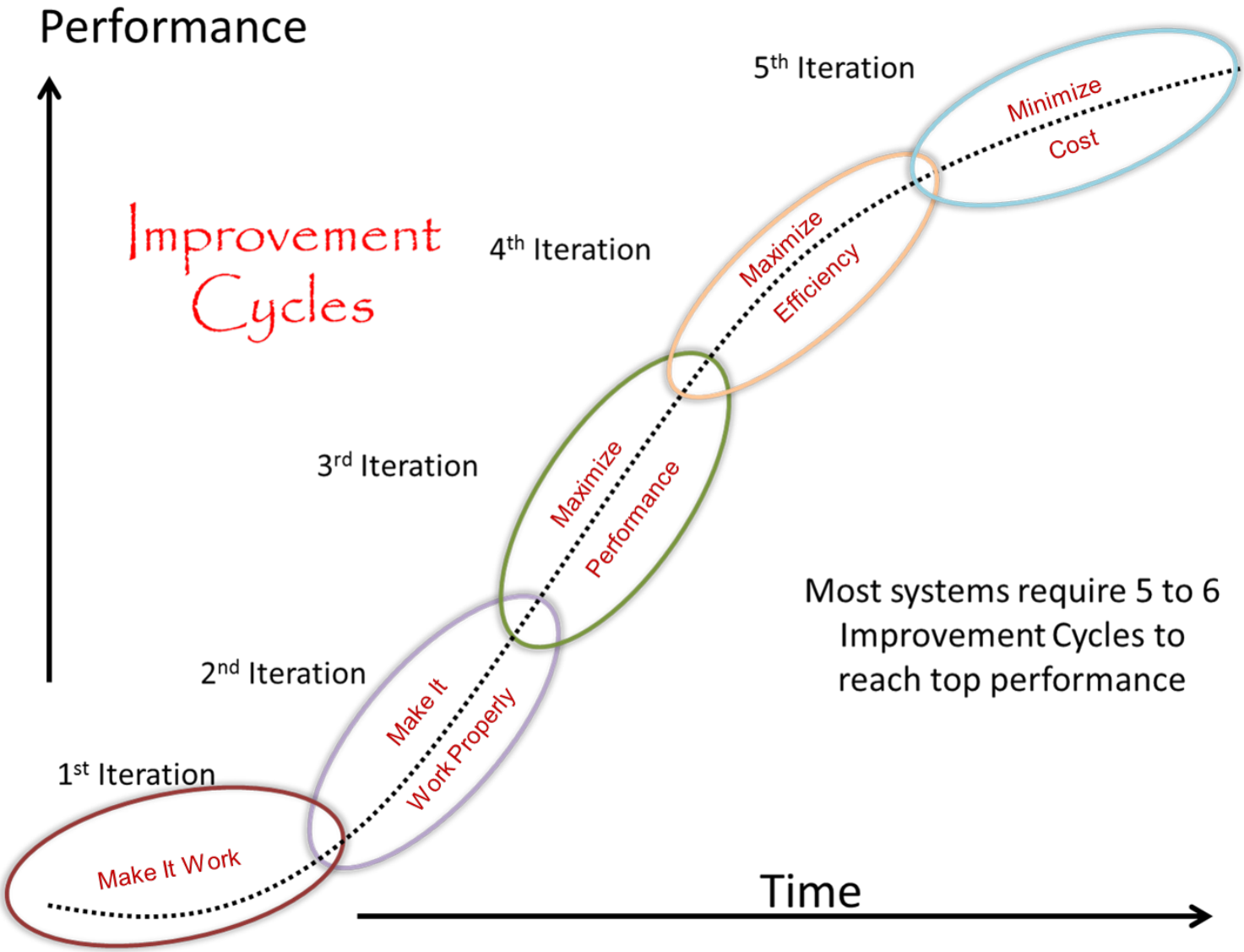


The Shingo insight set off additional inquiries... *'And what else..'* might be based on myth, marketing, or guessing about what they thought they saw (*like Takt time, 5-S, 7-wastes, one piece flow, kaizen events*...), An earlier article, *"For the Lean Experts: What if we made some mistakes in the beginning?",* outlines many of the misunderstandings drawn from the early observations. While I doubt that the early observers deliberately misled us, there are some claiming *'counter-factual'* links of being part of the original development or claiming linage directly to one of the participants that developed TPS.

It is not Magic or Rocket Science

Take a walk out on your production floor, or along your value stream if you are a service provider. Look at what should be your primary KPI's -Safety, Morale, Quality, Productivity and Money. Then look at the most common examples where they do not meet your expectations. How many are simple failures due to failure to properly communicate, or clearly set expectations, or oversights, or forgetting, or too busy... trying to stay busy so the boss won't complain, or personality conflicts, or working around problems because they have become the norm, etc... the bulk of most operations have simple problems, but no structured process to address them.

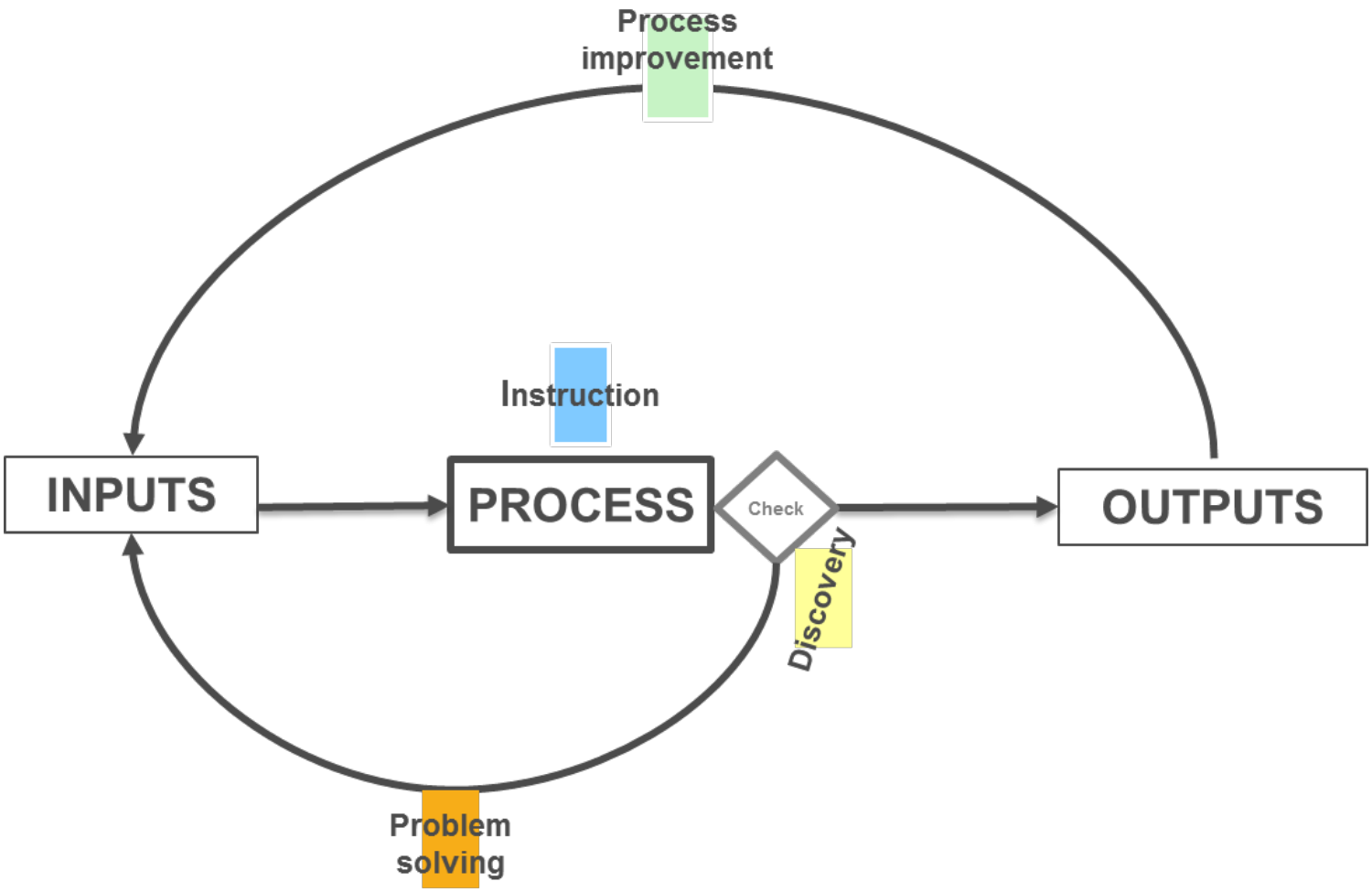
Instead of addressing all the smaller problems, your experts are out looking for the big spectacular problems to solve... *home runs* that create massive numbers that they can brag about on their annual review and lobby for a raise and promotion or on their CV so they can get their '*dream job*'.



Taiichi Ohno's success at Toyota was building a team that did thousands of small daily incremental improvements. No matter how much the first improvement cycle creates, don't be satisfied with the first round of improvement, no matter how much better it is over what it was. Your ability to make improvements grows as you practice. Most processes take at least five iterations before you get to the best-known performance with current technology. Then it will be obsolete again when a new bit of technology is developed... and you start the cycle all over. In the short term, it's not sexy, but in the long term, the adaptive production system is most likely to win the race in the market.

The ***System Developers*** discover profound knowledge about their systems one process step at a time. Start with the basics, then you will have the answers to building your adaptive production system. Try starting with deliberate practice of the same basic problem-solving patterns that Taiichi Ohno used.

Adaptive Production Systems



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

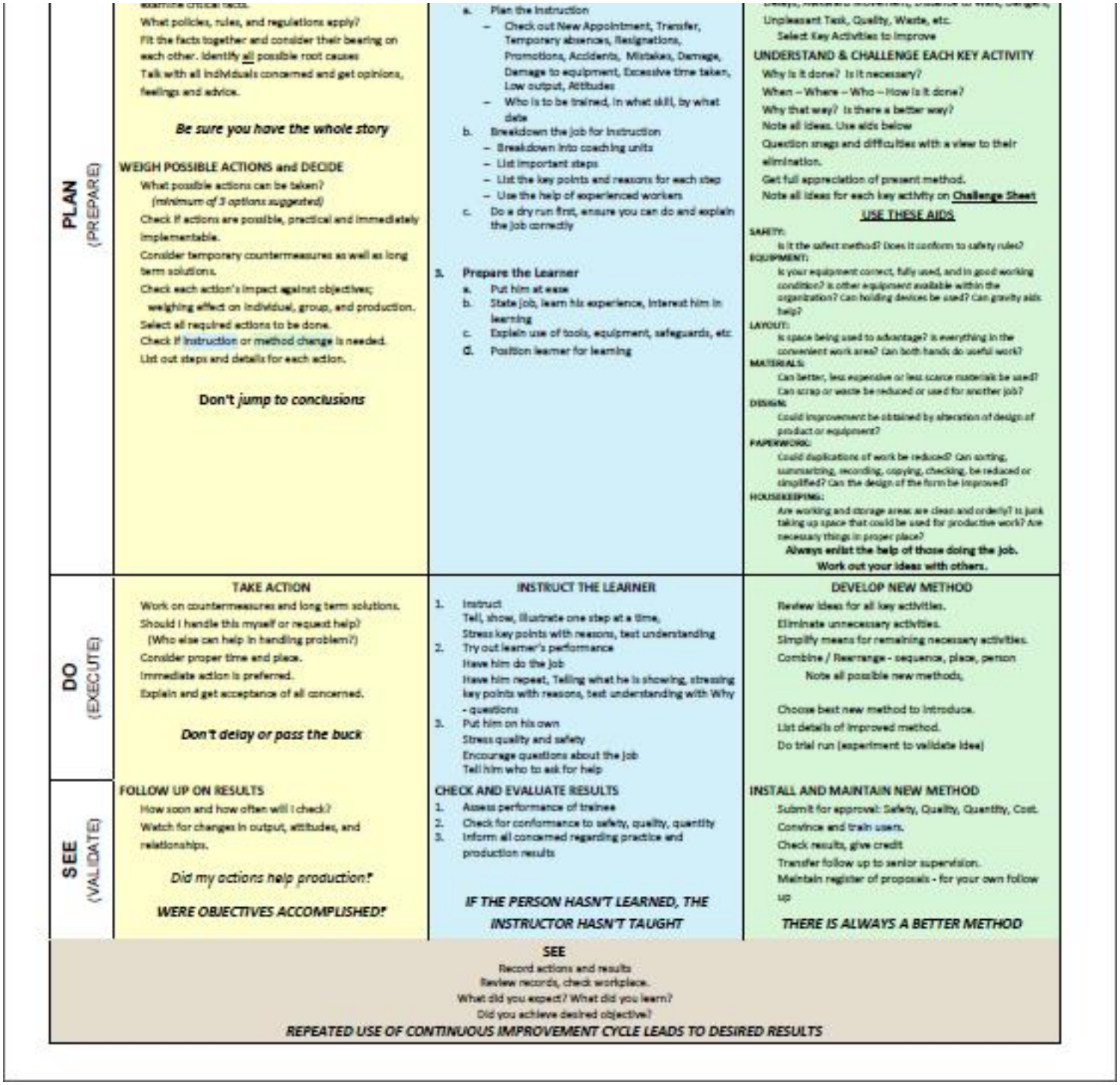
4. RECORD THE FACTS
- Validation process using F.O.G.
- Experiment to validate guesses.
- Capture all details revealed.
- Is the fact relevant to the problem?

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

Barriers, Relations issues, Ad Hoc issues, uncertain cause	Skill deficit, Nonstandard work methods	Process snags, unstable process
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	**GET READY TO INSTRUCT** 1. **Prepare the Workplace** a. Get specific tools, materials, equipment b. Arrange for best efficiency 2. **Prepare yourself**	**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.



If you liked the article, please share and pass if forward.

Ohno's Secrets - Part 1

The beginning of a coaching offer; my way of *passing forward* what I have learned over the past 40 years .

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

Ohno's Secrets – Part 3

Coming soon...

solete?

Footnotes:

[1] Original TWI discussion group - Mark Warren, David Meier, Jim Huntzinger, and Don Dinero. About a year later, Bryan Lund and Jeff Maling joined.

[2] David Meier wrote about how Toyota uses the Job Instruction program in "*Toyota Talent*".

[3] List of original members of OMCD's self-study groups – pg 13, *"Toyota Kaizen Methods: Six Steps to Improvement"*

[4] The origins of the P-course credits should go to Tsuneo Ono and the Japan Management Association (JMA). Shingo was one of the first trainers for the JMA program (he was a student of Tsuneo Ono). *"On The Tabletop Improvement Experiments of Japan"*, Alan Robinson and Margaret Robinson, Production and Operations Management, 1994, Volume 3, Issue 3, pp. 201-216.

Written by

Mark Warren
Experienced Manufacturing Professional "Discovering Solutions with People"

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7 comments

Ozcan Aladinli
IATF - International Qualified Automotive Auditor -…
··· 1w

Thank you very much for your valuable sharings Mark

Like **Reply**

Bob Emiliani
Professor I Creator of Speed Leadership
··· 4mo

Regarding the history of the P-course, see "On The Tabletop Improvement Experiments of Japan," Alan Robinson and Margaret Robinson, Production and Operations Management, 1994, Volume 3, Issue 3, pp. 201-216. https://goo.gl/DZP8jX

Like **Reply** | **1 Like** · **2 Replies**

Mark Warren
Experienced Manufacturing Professional…
4mo

Thanks Bob, looks like I will need to update the origins of the P-course credits to Tsuneo Ono with the Japan Management Association. In the link you furnished (pg 236-7) it gives some details and even mentions that Shingo was one of their first trainers for the program, being a student of Ono.

Like **Reply**

Bob Emiliani
Professor I Creator of Speed Leadership
4mo

You're welcome. You may want to have a look at this as well
http://www.emeraldinsight.com/doi/abs/10.1108/17511341011051234

Like **Reply** | **1 Like**

Bill Waddell
Principal at Bill Waddell Manufacturing Leadership…
··· 4mo

Great article Mark. If you read the original version of Shingo's book then you also noted the references to Ford that were dropped in the second edition. Follow that trail to see what happened when Iiji Toyoda visited Ford in 1929 and shadowed Charles Sorensen for three months. You get to the real origins of TPS .

Like Reply | 1 Like

Bryan Lund
Production & Quality Management at Edlund Company LLC

··· 4mo

Interesting article Mark. Putting a generational time span to the problem of understanding "lean" as it has been portrayed helps clarify the problem. There have been many outrageous claims made about lean while invoking the Toyota name over the years by people who have never worked there and this helps explain why. As you know, I'm highly critical of this marketing approach. If I could add to this...

First Degree: TPS originators (1950s)
Second Degrees: First Successors (1960s-70s)
Third Degree: Second Successors (1970s-80s)
Fourth Degree: Third Successors (1980s-90s)
Fifth Degree: Fourth Successors (1990s-10s)

The books we have read in the 70s, 80s and 90s are at best - representations of what industrial tourists and journalists observed 30-50 years after the fact.

For somebody like myself, who entered the workforce in 1997, that puts me in a fifth generation period where I'm trying to unravel what is real and what is not based on what we read and what others try to sell us. And the fourth generation successors of the 80s and 90s weren't even Toyota employees who wrote all of the books. We are talking consultants, journalists, academia, etc., correct?

One might be asking at this point: what is there to unravel? In my experience, we are simply copying motions as Mark describes, without real understanding of our problems. Unraveling some truths around "lean" has helped me clarify how to be a better manager.

Being a 7th generation Vermonter, it requires much research to go back into time and learn more about my genealogy. Even in my own family history, I've learned facts by uncovering the record and seeing it for what it is, not something somebody wanted me to believe it to be. For example, one of the things I uncovered was that everyone in my family claimed "Lund" was from Sweden, which it is, so they assumed our family was as well. But the record for my family shows that there was a lineage of Lund from England. This was not so much of a shock as it was a clarification to family members to learn of this. But once they knew the facts, they accepted them. They do not cling to the past.

If somebody told you 5S was originated in Japan, would you believe them? What if that wasn't true? Would you want to know what 5S really means? If the Japanese acquired that knowledge from some other source, would you be curious about that source? Was there anything lost in translation, or evolved in practice? Or is it really just as simple as sort, set, shine, standardize, sustain?

If this same phenomenon is true in our industry, it brings our understanding of "lean" into serious question. We should be on guard when we hear from people who proclaim to have a "bloodline" back to Toyota, or Japan, because even if they do it is a distant and dim connection. When they do not have a direct connection - using the race and culture of another people to bolster one's authority is an ugly marketing technique. Creating a cult of experts out of questionable dogma is a disservice to industry.

Like Reply | 2 Likes

Xavier Tholey
Global Head of E2E Supply Chain, Quality & Conformity…

··· 4mo

Alain Perrot

Like Reply

Raphael Garcia P.Eng MSC MBA
Founder CEO at RG Solutions International

··· 4mo

Hi Mark Warren,

I was going to say "if you can" but I can see that you are a man with a mission. Please read
Takeshi Kawase
Human-centered Problem-solving: The Management of Improvements.
You will complete your last table. (TPS in Japan is wip. This is more recent that the 70's, it will be the beginning of your global secret part 3.

Like **Reply** | **2 Likes**

Ashok Motwani
Seeking Consultancy opportunities as a…
4mo

Dear Mark Warren, the matrix at the end of the article is not readable when zoomed in, could you please update it or please send me a copy, if possible. Thanks in advance.

Like **Reply** | **3 Replies**

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Ashok Motwani
Seeking Consultancy opportunities as a…
4mo

Dear **Mark Warren** thanks for your kind response. I will be looking out for the update.

Like **Reply**

Mark Warren
Experienced Manufacturing Professional…
4mo

The link has been added, click on the poster and you should be able to access the file.

Like **Reply**