MAVERICK INSTITUTE

Lean Knowledge Transfer Tales

How Retooling a Value Stream for Onboarding
New Engineers at a Major Auto Manufacturer
Reduced Training Costs by 80% Per Year

This is the true story of a Maverick Lean Knowledge Transfer Black Belt Project

Lean Knowledge Transfer improves the efficiency and effectiveness of training and learning.

Lean methods eliminate waste and drive training toward improving specific business metrics.

In today's trimmed-down companies, new hires need to be brought up to full productivity as quickly, and with as few mistakes, as possible.

One of our Black Belts works for a major auto company that was having difficulty getting newly hired engineers up to speed with CATIA, a sophisticated 3D CAD (computer-aided design) system.

CAD systems are big and complicated. Most require extensive training to use them effectively, especially when the organization using them has developed specialized procedures and techniques.

But in spite of a big budget and extensive classroom instruction by a reputable third-party vendor, the automaker's new hires were unable to learn the system well enough to jump into project work. They made mistakes and needed considerable help from their colleagues to accomplish even simple tasks. No one was happy with the effectiveness of the existing learning solution:

- The company's IT help desk received many new-hire questions on "basic" tasks. The IT desk techs kept asking new hires: *"Didn't you just take a course on this?"*

- Managers of the new hires were saying: "*They [the new hires] just spent five whole days in training, and they STILL can't do anything in CATIA. We have to retrain them from scratch.*"

- The third-party vendor instructors were saying: *"They [the new hires] are sleeping in our classes, showing up late, not returning from breaks, leaving for meetings and surfing the net. It's not our fault."*

- The new hires themselves were saying: *"The training is overwhelming. There's too much to remember. It's boring, and it's not connected to the actual work we do."*

When you have a situation where many different stakeholders are involved in a learning solution, the Lean approach is to pull way back and look at the entire **Learning Value Stream**.

This was a perfect Black Belt project and a great problem to attack with Lean Knowledge Transfer.

First Things First: What is a Learning Value Stream?

In Lean, a value stream is the sequence of all the steps required to deliver value to a customer. In manufacturing, value streams begin with raw materials, then move through steps like processing, coding, assembly, testing, packaging, delivery, installation and usage.

A Learning Value Stream is the sequence of ALL the steps needed, from A to Z, to deliver **mistake-free performance through learning**.

Learning Value Streams start with learners and content, move through instructional design, content presentation, questions and practice, and end with on-the-job performance and feedback.

Learning Value Streams that are not highly coordinated or well sequenced often have discontinuities that hurt effectiveness.

Failure is often rooted in "suboptimization," which means that the individuals and groups in the stream do what's best for them and their part of the value stream, not what's best for the stream overall, namely the learners' performance.

For example:

- Human Resources selects a training vendor that meets their budget, or is already an approved vendor, not necessarily the one that can best address the learners' needs.

- An instructional designer doesn't clearly understand the problem being addressed and includes a ton of unneeded content just to be sure all based are covered.

- Classroom instructors schedule sessions that best accommodate their needs, not the learners' work schedules.

- Managers are focused on productivity and try to minimize learners' time away from the job for instruction.

Learning Value Streams need to be "owned" by one person who is in a position to "see" the entire stream from end to end, and make decisions based on what's best for the stream overall.

In this case, our Black Belt candidate did exactly the right thing. He went to the various parties involved and gained their agreement, allowing him to "own" the value stream.

When Learning Value Streams are not highly coordinated or well sequenced, they often have "discontinuities" that hurt the effectiveness of learning solutions.

Failure happens when individuals or groups do what's best for their part of the stream, not what's best for the stream overall.

The Plan-Do-Check-Act (PDCA) Cycle

The PDCA cycle is a Lean roadmap that can be used to improve any process. In Lean Knowledge Transfer, you:

· **Plan** by identifying the learning goal, studying the gemba (workplace) and developing ideas.

· **Do** by implementing what you've planned.

· **Check** by measuring results to see if you've achieved the goal.

· **Act** by rolling out a successful learning solution to a larger group. Or, if the solution didn't meet the goal, tweaking it or starting over and then going through the PDCA cycle again, as many times as needed to arrive at a successful solution.

The PDCA cycle is critical because we humans have a natural tendency to throw stuff at the wall and see if it sticks. Nothing wrong with experimentation, but doing so before you've done the **Plan** part of the cycle just leaves you relying on hope and/or luck.

When you do that, you end up bouncing back and forth between **Doing** and **Acting** without a clear understanding of what's wrong in the process.

The PDCA cycle is critical because it guides us to spend equal time in each quadrant of the cycle, instead of following our natural human tendency to throw stuff at the wall.
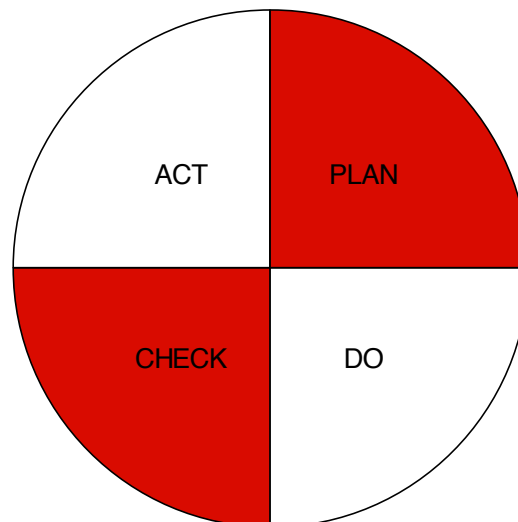
The PDCA Cycle makes the steps to improvement very clear, and it also guides you to spend equal amounts of time in each quadrant of the cycle.

Let's follow our Black Belt candidate as he used the PDCA to remake his Learning Value Stream.

FIRST PDCA STEP: PLAN

The **Plan** quadrant includes methods that helped our candidate thoroughly understand what was going on in his Learning Value Stream: Good Problem Statement, Mapping the Learnscape and SMART Goals to retool the stream.

Good Problem Statement

Here's our candidate's Good Problem Statement:

> *In 2012, we spent $115,000 on classroom instruction to teach new engineers CATIA basics. After 45 hours of classroom training, new engineers required 80 hours of remedial help from senior engineers (spread out over 4 to 8 weeks), which cost an additional $184,000 in their time.*

This problem statement captured everyone's attention very quickly.

Good Problem Statements are a critical part of the Plan quadrant of the PDCA cycle.

*A good problem statement guides you as you **Map the Learnscape** and develop **SMART goals**.*

Without the Plan step of PDCA, it might have been easy to assume the training vendor was the root cause of the problem and then jump to a solution and engage a replacement vendor.

As you'll see below, this would have been wrong. PDCA made our candidate dig deeper, and in doing so, he found several root causes.

Mapping the Learnscape

Mapping the learnscape helps you discover the root causes of problems.

After doing discovery techniques like the Gemba Walk and reviewing the training curriculum with the company's engineering "top guns," our Black Belt candidate discovered that the Learning Value Stream was filled with training waste and sub-optimization:

- The new hires were getting vendor-led classroom training taught in five consecutive, nine-hour days.

- The primary knowledge base for the course was a four-inch-thick, generic CATIA book, provided by the vendor, that nobody read.

- The training was often a form of "babysitting." Managers often sent new hires to training classes to fill up their schedules because the managers were unprepared or too busy to onboard the new hires when they arrived.

- There were no consequences for non-performance on anyone's part.

- New hires didn't need 11 out of 33 chapters being taught from the book because these topics were not applicable to the engineers' work.
- The class was all solids based (working with 3D objects), but half of the new hires only needed surface-based 2D skills. The surface-based new hires were taking the class and arriving in their work areas without the skills they needed.
- The vendor was charging $450 per generic four-inch-thick book, which every student received and nobody read, costing the company $12,000 to $45,000 per year.
- The classroom was big—30 feet from front to back—and laid out in horizontal rows with the instructor at the front. This made it difficult for the instructor to quickly interact with individual learners. In addition, the room used a small, poor-quality projector, preventing learners from clearly seeing screen details.

Discovery techniques such as "Gemba Walks" help you discover the root causes of learning problems as you Map the Learnscape.

Smart Goals

Now that he had a thorough understanding of the value stream, the next step for our candidate was to set a SMART goal. Here it is:

> *Provide engineering departments with new hires that are competent to solve basic problems using CATIA in 10 days without requiring remedial help afterwards.*

Note the specificity of the goal (10 days) and the fact that it included eliminating the training waste of having to reteach the new hires that didn't learn the first time.

Lean Plan to Retool the Learning Value System

Our candidate was now ready to create a plan that retooled the entire learning value stream for the new hires, and then move on to the next quadrant of the PDCA cycle to implement it. You can see what he did in the "DO" section below.

SECOND PDCA STEP: DO

Armed with the above, our candidate was ready to tackle retooling the learning value stream. Here's what he did.

Expectations Changes

- Managers were asked to provide a current, relevant engineering capstone project that represented typical work for a new hire in their department.

- New hires would present their capstone project results at the end of the training to the instructors and other students.
- The course was made pass/fail. Failure to pass meant new hires couldn't sign up for subsequent CATIA courses. They would need to work with instructors until they had mastered the material.
- The training vendor was asked to create a list of specific performance objectives for the course and provide it to the new hires so everyone was clear as to what they needed to demonstrate to pass the course.
- The training vendor was directed to conduct a brief kick-off meeting with the new hires to explain the course structure and expectations. For example, new hires were told that they were expected to read materials and watch videos before classroom sessions. *"We're not going to wait for you to catch up."*

Curriculum and Schedule Changes

- Our candidate reduced the number of chapters being taught from 33 to 22. In addition, some of this content didn't need instructor-led training, so they quickly created short videos to watch. This cut classroom training from 45 hours to 24 hours, an almost 50% reduction.
- He also created two learning tracks, one for solids and one for surfaces, so the engineers receive instruction that is matched to the actual work they will be doing following the course.
- Classroom instruction was changed to four 6-hour days alternating with days for the new hires to work on their projects.

Classroom Changes

- The smaller class sizes allowed our candidate to change the classroom layout to a U-shape, bringing all learners toward the front with the instructor in the middle. This made providing individual help quick and easy.
- They also bought a high-definition projector that eliminated the problem of learners not being able to see screen details.

Book Changes

- Our candidate had the course book content and exercises customized to be company specific. This entailed working with the legal departments of both his company and the training vendor to get beyond copyright issues.
- The four-inch-thick book was broken down into four half-inch-thick booklets, which were made available at the start of each classroom session.
- Outside class, new hires could now access the course book online in a searchable PDF.

Our candidate reduced the number of chapters being taught from 33 to 22 and created short videos for content that didn't need instructor-led training.

These changes led to a 50% reduction in expensive classroom training.

THIRD PDCA STEP: CHECK

Results from our candidate's changes have come in, and they are strong.

- New hires are asking the instructor good questions from the very first day, which never happened before.

- Class attendance is 100% and the project solutions are very good. Since the initial roll out, about half the new hires failed the course, but all quickly completed the necessary follow-up work to pass. Consequently, adjustments were made to some of the project assignments so they could be completed in the allotted time frame.

- Providing only classroom copies of the new book and an online searchable PDF is saving the company 50% on book costs.

- New engineers arrive on the job ready to work and the need for remedial help from senior engineers has been almost totally eliminated. One supervising engineer commented: "I can assign them work immediately and they can get it done. What a difference!"

FOURTH PDCA STEP: ACT

With excellent initial results like these, our candidate is preparing to deploy the new retooled approach to all CATIA classes throughout his organization.

This will significantly reduce instructor-led training hours and eliminate the unproductive remedial training hours cutting into project work.

In addition, our candidate is now ready to begin retooling other software training with Maverick Lean Knowledge Transfer.

The Lean KT Bottom Line

Our Black Belt's retooling of his company's CATIA Learning Value Stream has reduced new-hire time to productivity from between five-to-nine weeks to **only two weeks**.

Instead of needing tons of remedial training and help, the new engineers are now coming on board competent and ready to work!

And that's not all.

While achieving these dramatic gains in productivity, our candidate will save his company **$224,000 in the first year (a 75% improvement)**. And when these Lean KT improvements are rolled out to the rest of the CATIA training curriculum, **he estimates future annual savings at $989,000 (an 80% improvement)!**

New engineers now arrive on the job ready to work.

The need for remedial learning from senior engineers has been almost totally eliminated.

New-hire time to productivity has been reduced from five-to-nine weeks to only two weeks.

Cost savings from this Value Stream Project are $224,000 in the first year and projected at $989,000 per year at full roll out.

Return on Maverick certification cost for this project alone will be 15x in the first year and more than 60x per year at full roll out!

ACTION	FIRST-YEAR COST SAVINGS	FUTURE ANNUAL COST SAVINGS
Eliminated remedial training	$184,000	$420,000
Reduced instructor-led training costs	$33,000	$462,000
Reduced book costs	$7,000	$107,000
TOTAL SAVINGS	**$224,000** **75% improvement**	**$989,000** **80% improvement**
Return on Certification Costs	15X	60X

We aim for our Maverick Lean Knowledge Transfer Black Belts to recover the cost of their certification by at least 10x. For this candidate, first-year savings from this one project are over 15x of the certification cost and future annual savings, when the Lean Knowledge Transfer approach is fully deployed, are over 60x!

If our candidate had not taken charge of the entire learning value stream, he never would have seen all the root causes of the problem, nor had the authority to make the necessary changes that produced these stellar result

This is a perfect real-world example of the power of Lean Knowledge Transfer. We're looking forward to seeing what our Black Belt tackles next!

About the Maverick Institute

Founded by long-time Lean practitioner Todd Hudson, the Maverick Institute pioneered the application of Lean methods to training and learning.

Our Lean Knowledge Transfer clients come from around the world and include learners from some of world's most respected manufacturing and healthcare organizations.

Todd Hudson is an industrial engineer and a Lean Six Sigma Black Belt. He is a frequent public speaker and author of two books on Lean onboarding. His third book, **Increasing Knowledge Flow**, will be published in early 2018.

Want to Know More?

You'll find more information on Lean Knowledge Transfer and our approach at **maverickinstitute.com**.

Subscribe to our blog, which offer mini-lessons, tips and other great ideas you can use to make your learning solutions Lean.