



OJT²

How to improve your **On the Job Training**

By Joel Levitt

What makes success in training? Keeping in mind what kind of competency we are shooting for.

I asked a maintenance old-timer how much maintenance competence is transmitted in schools versus how much is learned on the job (OJT). He answered 85% on the job. He was actually more specific than that. He said there were three issues of training. One is knowledge. School does a pretty good job of teaching knowledge (like the electrical code). The second issue was skills. Schools do a fair

to poor job of teaching skills. The third issue he was concerned about was judgment or wisdom. Schools don't teach that at all.

In the 1970's when the old-timer was an apprentice, maintenance was primarily a skill based business. People with just knowledge were said to be able to talk the talk but they couldn't walk the walk. Even then there was critical knowledge (like for the electrician how many amps can a 10 AWG wire carry when it is in a conduit?).

In the old-timer's world, knowledge would have clearly been the stepchild of the other two competencies. Knowledge and "book learning" was the providence of engineers. In his world the engineer had the knowledge and was usually considered a desk jockey (at least most of them were) and shouldn't be let loose in the shop.

Of course today the balance is tilting toward knowledge. A skilled mechanic can tell a lot about an engine from just listening but someone with the right knowledge can plug the vehicle and get a comprehensive read out of all the attributes, faults, settings and diagnostics of that engine and transmission. It still pays to be able to listen but we are rapidly moving toward computers telling us what is going wrong and what to do about it. We can piss and moan about that trend but the days of the shade tree mechanic are rapidly becoming history.

You learn judgment or wisdom from being around wise people and (unfortunately) making some of your own mistakes. Wisdom or judgment was invisible, slow to acquire and hopefully rubbed off on you so that when you were the senior guy you had it too. We always said judgment was the result experience. Experience was the result of making mistakes and learning from them. In today's litigious society people are not allowed to make mistakes and learn from them. We hope there are alternate roads to wisdom so that the development of wisdom is not stunted.

If we dissect success in maintenance we come up with about 5 critical attributes. If any of these attributes are missing than success is doubtful. We have already discussed three:

Type	Observable behavior	Performance level
Knowledge	be able to describe diagram, argue, etc.	answer X of 10 questions correctly
<p>Example of this domain would be questions like what is the process to heat treat steel to a particular specification, describe the steps to obtain a hot permit in this facility, how would you program a cascade pumping arrangement with a Allen Bradley PLC.</p> <p>The knowledge domain is what is taught in most schools. Generally it is easy to test this domain. Sometimes you will find mechanics that can do something but don't know what or why they are doing it. When people know how to do something without knowing what they are doing two problems are created: The person might unintentionally create a dangerous situation or a cascade failure in another system. The other problem is without the knowledge the person cannot be as creative and think outside the normal way to solve problems.</p> <p>There are a wide variety of ways to transfer knowledge. Since schools are the center of this domain they do everything from straight lecturing, discussions, reading, programmed learning, and demonstration among the ways.</p>		
Skills	demonstrate, show perform, solve	do ... in x minutes with no mistakes
<p>Example of this domain would be to ask the candidate to demonstrate their competence by welding two pieces of 308 stainless in a vertical position or make off MI cable connection to at least 3 meg ohm resistance to the casing. Most on-the-job training consists of skill training. In maintenance we admire skilled mechanics. If you have the proper demonstration set-up this is also easy to test.</p> <p>Many people have the knowledge without the skill. We say they can talk a good game... but can they weld, etc.! A metallurgist might be someone who can explain the details of</p>		

the welding process without actually knowing how to weld. They could specify the tools, heats, covering gases, wire type of weld, without being able to do the welding themselves.

There are a few ways to teach skills but they all boil down to having the trainee do something and having the senior person (or some other way) give them feedback.

Attitude	comfort, without hesitation	to your own satisfaction
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A training manager in Australia who was responsible for apprentices said that the biggest thing that they have to develop is confidence. Appropriate confidence is an attitude. Example of this domain would be to discuss their comfort level with a particular technology or their work ethic. This is more difficult to test for. Someone could conceal their discomfort. You occasionally run into trades people that have the skills and knowledge but lack the will or the confidence to do the work.

At the other end of the spectrum are people with inappropriate confidence. These people are a danger to themselves and others.

The last quality filed under attitude is the employee with a “bad” attitude. Attitude problems might start with a void in a skill or knowledge that creates frustration and eventually a bad attitude. In other cases the person might lack the capabilities such as strength, height to do the job. Fear might also play a role.

Aptitude	Has the physical, mental capability	Demonstrate strength, visual acuity or intelligence
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Many jobs require a certain strength or endurance level. Other jobs require simple (or not so simple) computations. Every job has its minimum capabilities required. Failure at a job might simply be a lack of strength, visual acuity or other physical or mental ability. This lack might be able to be accommodated for (through power lifting gear, magnifier inspection lamps, redesign of work space. If the job cannot be redesigned or accommodated in any reasonable way then the person is not suited for that job.

Sometimes this lack is confused by supervisors with the employee having a bad attitude as the person tries to cover up their problem. It is the supervisor’s job to notice these type problems because a great employee could be lost to an inappropriate job.

Wisdom or judgment	Has judgment about situations and sees deeper into what is best for the company.	Hard to test without a problem to let them loose on.
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Wisdom is the goal of maintenance people at the top of their career and at the top of their game. Some of it comes from hanging around wise maintenance masters. The

bulk comes from doing, and seeing what happens. Sometimes the consequences are severe but the lesson is learned.

Lt Kane of CSI Miami is a character who is written to have wisdom. Various story lines indicate he paid a high price for his wisdom. In one episode Kane was speaking to a building inspector after a fatal fire in a night club. The inspector (who was misled about the flammability of the interior) asked Kane how he would live with the guilt. Kane told him the guilt makes them better at their job.

This is the toughest one to test because it is almost impossible to observe until the person is in action and sometimes the deep judgment is not obvious until well afterwards. In many cases people that have it are very ordinary to look at but something takes over when they move into action.

We think we can foster this by giving the trainee a wide range of opportunities to work with different people on widely different equipment and situations. Giving him/her some rope to make mistakes, do their own thing even if it is not the best way. Making sure they take advantage of training opportunities and have a chance to teach what they learned.

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