



Adapting the “Master-Apprentice Model” to the 21st Century

Apprenticeships are in vogue, but there’s more to it than that.

Hardly a day goes by without overhearing the word apprentice, apprenticing, or apprenticeships. In some cases, it is simply renaming long-standing training programs to be in vogue with the buzzword of the day. Much of it is something new, however, for both good and not so good reasons.

The Original Model: Trades have been learned and passed down from generation to generation since the dawn of time. Widespread access to universities and unlimited education is quite new, historically speaking. People became blacksmiths, carpenters, candlemakers, watchmakers, silversmiths, or farmers. To learn the necessary skills, apprentices would work alongside the Master for 8-15 years. When an apprentice learned and demonstrated all the skills necessary, the Master would pronounce the apprentice to be a Master. Both masters then got new apprentices. In many parts of the world, that’s still how things get done today. The take-away from the original model is that the Master had to know how to do everything, from raw material through finished product.

The Specialization Model: Work-specialization models began evolving in the 1850s. It was not until Henry Ford (Ford Motor) and Frederick Winslow Taylor (Work Specialization) got together in the years before 1920 and turned the production of automobiles from one person builds the entire car to many people each build a part of a car, that the original model finally changed. Universities also began changing about this same time. Students once earned a generalist degree in an area of liberal arts or science. Since the 1920s, degrees have become more numerous and more specific. Widespread task specialization is now about 100 years old. The takeaway from the specialization model is that apprenticeships were reduced to four years, as evidenced by either employment or university time. The advent of community colleges and other one- and two-year credentialed programs aimed to further reduce the length of apprenticeships.

The Collaboration Model: By the early 1980s, specialization had gotten so out of hand that people threw things over walls between every activity. They knew their jobs and were not concerned enough about what needed to get done upstream or downstream of them. Time cycles grew longer and rework was rampant. The wake-up call came from Japan.

Since then, beginning with Concurrent Engineering and Concurrent Product Development, one needed to master their own specialty and have a basic understanding of adjacent activities and empathy for the ranges of variation. For the last 30+ years, collaborative technologies and common systems (i.e., PLM) have continued to address the issue of integrating adjacent activities. The take-away from the collaboration model is that apprenticing went back toward the original model. Job enlargement and expansion was required to again cover a wider domain.

Many Labels for Learning: Did you double-blink when the previous paragraph equated apprenticing with having the full set of skills to do a job? They are more alike than they are different. Every person knows when they become comfortable in their role and can perform it to the fullest. For many professions, it takes a year or more. Few reach this point in under a year. Generally, the higher one goes in an organization, the longer it takes. The domain that needs to be mastered grows at each step.

The Displacement Model: By 2005, as the EU grew together and China and India came of age, while automation rates and the internet expanded, one could see that things would change a lot. Manufacturing would be done differently, and the service economy would steadily grow to become the dominant sector. And everyone needed computer skills. The U.S. was about to go through its most challenging transformation, and the first one that was not solely driven from within. Many in recent generations did not have the skills they needed. Senior generations needed new skills and to learn new industries. Middle generations needed to continually reskill. Until the global economy started growing again after the Great Recession, the extent of the skills gaps was hard to see. The take-aways from the displacement model are that apprenticeships are again becoming more specialized as systems handle the interfaces, and are headed to last 1 year or less. **md**

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