

Embedded Learning: Integrating Skill Acquisition into Day-to-Day Activities

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Economies around the world are challenged with a chronic lack of skilled employees. Despite high unemployment levels, many companies struggle to find people who have the technical qualifications and experiences needed to fill critical roles. Traditional educational structures are failing to produce the numbers and kinds of skilled candidates companies need. While there are many ways we can and should improve our educational systems to address the skills crisis, we should also be doing more to rethink the methods we use to develop skilled employees.

Rather than telling workers they must go to school to acquire new skills, its time to give people tools that help them learn from their current lives without requiring formal education.

To fully understand why, let's look at the following:

1. Methods people use to acquire skills in the absence of formal training programs and why technology is enabling us to go "back to the future" when it comes to learning.
2. Barriers that prevent unskilled workers from acquiring more advanced job skills.
3. How we might leverage people's day-to-day life activities as an under-utilized resource for acquiring skills.

How do people acquire skills organically? Going to school is not the natural way for people to learn. Don't get me wrong – I believe in the power of a good formal school system. But if we look at the history of humans we did not develop schools until pretty late in our evolution. For centuries we managed to learn without classrooms and courses. So how did we do it? The answer is learning from experience and observation. People acquired skills by working alongside people who knew more than them and engaging in tasks that challenged them to think differently. In other words, the most natural way for people to learn is through formal and informal mentoring and apprenticeship relationships.

The problem with the apprenticeship approach is it doesn't scale well. There simply aren't enough apprenticeship opportunities available to produce the number of skilled employees we need. In addition, not all experts make good mentors and coaches. But technology is starting to change this. YouTube is probably the best widespread example of how cloud based technology is allowing skilled mentors to share their expertise with people around the world. Want to learn how to play guitar like Brian Setzer from the Stray Cats? There's a video where you can virtually "sit down" with him for an hour while he shows you various tips and tricks. Want to learn how to cook like Emeril? Check out videos where he'll walk you through what he does to create unique flavors. Public access video technologies like YouTube and private access social learning technologies like Jam are addressing the historic challenge of scaling expertise through mentorships.

We now have technology that allows us to manage many issues that historically limited the value of apprenticeship based training. This technology makes things possible around learning that weren't possible 10 years ago. But technology by itself does not solve problems. You have to use it correctly. So what is required if we are to use this technology to develop underskilled workers?

What prevents under-employed people from acquiring the skills needed to advance their careers? There are three major barriers that make it difficult for under-skilled workers to acquire advanced job skills: lack of on-the-job learning opportunities, lack of time and resources for formal training, and limited awareness of what kind of skills will provide the greatest career opportunities. I will discuss each of these in turn.

One of the myths about technology is that it eliminates jobs. People have visions of robots replacing workers. But the reality is a bit more complex. Technology actually creates jobs because it fuels efficiency and economic growth. But the jobs technology creates tend to fall into two very distinct categories:

Highly skilled positions associated with developing and maintaining complex technological systems

Low or unskilled positions associated with performing basic service tasks that are impacted by technology but that do not require an understanding of how the technology works.

There is also a third category of jobs that technology does tend to eliminate: **semi-skilled positions** that people historically used to move from unskilled work to skilled work. Consider the example of auto mechanic. People used to become auto-mechanics by starting out in entry-level service station jobs that involved simple tasks like pumping gas and changing oil. Over time they would perform increasingly complex automotive tasks such as fixing brakes or replacing spark plugs that allowed them to acquire the skills needed to become a master mechanic. Contrast that to the modern career path to becoming a mechanic. Thanks to technology, you could pump gas for years and never learn anything about what goes on under the hood of a car. When you do look under the hood you are confronted with technology complex machines that are far more complicated than the V-8 engines of the 1960s. It is now very difficult to acquire the skills needed to be a mechanic simply by working in a gas station. Most mechanics had to go to school just to learn to use the technology necessary to diagnose engine problems, let alone fix them.

The increasing gap between skilled and unskilled positions makes it hard for people to work their way into skilled jobs through on-the-job learning. This has severely constrained what traditionally was one of the main ways people advanced their careers through skill acquisition.

The economic difference between being a skilled vs. an unskilled employee also places additional constraints on the ability of people to acquire job skills through formal education.

Unskilled jobs by definition can be filled by people with very little training or experience. Because the labor supply for these jobs is relatively high the wages for these jobs tends to be quite low. Many unskilled workers have to work multiple jobs to meet their basic economic needs. They do not have the time or money to enroll in formal training programs. This means the people that need skills the most often have the most difficulty enrolling in structured classes that teach them.

Last, unskilled workers may struggle to determine what sort of skills they should acquire because they are frequently isolated working long hours in jobs that provide little exposure or opportunity to learn skills that will help them advance their careers. They do not have access to mentors or other advisors who can provide suggestions on what sorts of learning opportunities will have the greatest benefit for their long-term job prospects.

A possible answer: embed learning into life. One potential answer to this dilemma is to build tools that will help unskilled workers to acquire valuable career skills through normal life activities. In the 1980s a series of studies were conducted showing that people who performed presumably mundane tasks at a very high level had found ways to use these supposedly simple tasks to develop relatively complex skills (e.g., Lave et al., 1984, Scribner, 1984). For example, shopping for groceries can involve the use of complex mathematical formulas when people truly challenge themselves to buy the most groceries with the least money. Similarly, people who excel at packing odd shaped objects in way that maximizes the use of storage space are able to do this because they have developed complex spatial reasoning skills. The phenomenon of acquiring complex skills through seemingly non-work related tasks goes beyond analytical reasoning. Years ago I was interviewing a woman who had not worked in many years because she had been focused on raising her children. When I asked her what sort of managerial skills she possessed she provided examples from her activities coordinating youth athletic activities that involved a level of organizational, relationship building, and financial skills that vastly exceed those of many people who have years of formal managerial experience.

What these examples illustrate is that the “everyday life” is rich with opportunities to acquire highly complex and valuable job skills. The challenge is getting people to recognize and capitalize on these learning opportunities. Social learning technology holds the potential to change this. Imagine online videos that teach people how to perform day to day tasks in a way that is more efficient and economical and that also helps them develop valuable work-related skills. This would allow people to use tasks such as scheduling children’s activities, performing home maintenance, or participating in volunteer programs as opportunities to develop skills and capabilities that make them more valuable employees. People could be also be shown how to leverage public online computer programs to build technology skills while simultaneously increasing their efficiency performing routine tasks such as household budgeting. To be fully effective, this online training would include advice on what skills are most in demand for different jobs and how to leverage skills learned outside of work to open up new career opportunities.

I am not suggesting this approach will be easy or that it will ever replace the need for formal educational programs and on-the-job learning. But embedding learning into life does provide an alternative way to acquire skills that is cheaper, easier to access, and in many ways complementary to existing education and job-based skill acquisition methods. And the upside is considerable. Instead of telling people they need to go to school or get a job to acquire critical career skills, we can encourage them to take advantage of the learning opportunities that are all around them. Perhaps in the future the key to getting a better job will be to simply focus on living a more effective and efficient life in general.

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