Bridging the Workforce Skills Gap

Cultivating talent inside your organization to meet high-tech challenges in manufacturing, architecture, and the creative arts.
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Tale as Old as Industrial Time

High-tech disruptors in the workforce are nothing new. In fact, this tale is as old as the industrial revolution, when economists predicted that innovations like sawmills and automobiles were sure to leave everyone from manual laborers to wagon drivers unemployed.

Today, some pundits continue to make a similar argument, predicting that a combination of Artificial Intelligence (AI) and advanced robotics are poised to put blue and white collar workers alike out of work. Indeed, the arc of innovation has always been characterized by a march toward more and more mechanization. But, historically, rather than killing off employment opportunities as feared, technological innovations have, instead, proven to be massive job creators.

This, however, doesn’t mean that AI and advanced robotics won’t dramatically change the employment landscape. It is true that certain jobs will die out as better technologies emerge. In the case of the wagon drivers, for example, the economists were correct – they did lose their jobs. But just think of the massive number of jobs that automotive technologies have created to replace those that were lost. There are the more obvious examples, such as vehicle manufacturing, car dealerships, professional drivers, automotive repair shops, and part replacement manufacturers. But also, there has been an emergence of tangentially-related industries that likely wouldn’t exist without cars, including highway construction, e-retailers, delivery services, suburban construction, fast food outlets, and gas stations.

The creation of new lines of work leave employers and employees alike with new challenges – the need to fill jobs quickly in brand-new fields in which few applicants possess the requisite experience. Advances are happening so quickly that many students now studying will enter the workforce in jobs that don’t yet exist today.

The disconnect that occurs when there are more jobs available on the market than there are qualified workers to fill them is known as the workforce skills gap. These unfilled positions result in lower productivity and lost profitability.

To quickly fill jobs in new and evolving fields, you must amplify your workforce learning and development programs. By training in-house, you can stay more agile and be better able to shift employees into new positions as the need emerges.

Here, we will examine current and future skills gaps in three fields: manufacturing, architecture, and the creative arts. Then, we will analyze the costs associated with the workforce skills gap and propose training and engagement solutions to help employers identify talent and develop employees in these fields.
Manufacturing

Manufacturing is the backbone of our nation. It’s an integral part of our history and, even today, the American public overwhelmingly believes manufacturing is vital to our country’s prosperity (90 percent), standard of living (89 percent), and national security (72 percent). Moreover, manufacturing is still a significant economic driver.

It’s true that, from 2000 to 2012, the U.S. manufacturing sector lost 5 million jobs. But, despite this, more than 12 million Americans, or nearly 9% of the workforce, are still employed in the manufacturing sector. Some states, including Wisconsin and Indiana, have more than 16% of their residents working in manufacturing. Manufacturing also creates additional opportunities in local communities; each manufacturing job leads directly to 2.5 more jobs in goods and services.

While employment in the manufacturing sector may never return to the level it once was, there are signs that new opportunities are emerging. Leading industry analysts continue to predict that a shortage of skilled workers will leave the US manufacturing sector with 2 million unfillable positions by 2025. These positions are well-paid careers in a highly technical space that incorporate innovative hardware, software, and even virtual reality applications. Based on the Control Engineering Salary and Career Survey 2016 the average annual base salary of respondents with a bachelor’s degree was $99,734, with an additional non-salary compensation of $10,391.

With so much opportunity for growth and good pay, it seems as if people should be lining up to fill these positions, but most simply lack the necessary technology and computer skills. Furthermore, the outlook for the near future shows no signs of improvement. Simply put, the manufacturing industry is just not “sexy.”

Matt Reilly, senior managing director of Accenture Strategy, North America, says that part of the problem is that manufacturing and engineering are facing tough competition from computer science in attracting young talent. “Manufacturing is nowhere in their list,” said Riley. ‘In the U.S., a lot of young people don’t want to be an industrial or product engineer. . . they want to go and make computer games. . .’

Although the recent emphasis on STEM (Science, Technology, Engineering, and Math) programs in schools is starting to make headway in encouraging younger generations to pursue career paths that lead to manufacturing jobs, critical Gen Y workers between the ages of 19 and 33 rank manufacturing as dead last as a career they’d want to start today.

While this might paint a picture of impending doom and gloom, it is, actually, an opportunity.
“Just as every company engineers its product lines, its supply chain, and its production process: You can engineer a talent pipeline,” according to Jennifer McNelly, president, The Manufacturing Institute. “Manufacturers can no longer afford to wait for an educated and trained next generation of manufacturing talent—they will need to do more to develop their talent pool, and the same old approaches no longer apply.”

This skills gap poses financial concerns for some of our nation’s leading manufacturers, and ultimately affects consumers as it slows the speed at which we can innovate and bring new products to market.

Architecture

The fact that a skills gap exists in architecture might seem surprising. After all, it wasn’t too long ago that the building crash left nearly 14% of recent architectural graduates unemployed. In reality, it is this period of high unemployment that is the root cause of today’s skills gap.

Under normal economic conditions, talented young architects would find themselves now nearly a decade into their careers with an impressive portfolio and the experience needed to move up in the ranks. But, because the building crash altered the formative years of their career paths, many recent architecture graduates opted to move into other fields or took on projects that didn’t develop their skills sufficiently. This has resulted in an over-abundance of entry-level architects and few that have the skills required to move into managerial positions.

Now that building is beginning to boom again, architecture firms are concerned. A 2015 investigation into the state of architecture in New York reported that “Without those seasoned [architects, many] firms are making due with less-experienced people, and as a consequence, are devoting more time, as well as money, to training them.” A roundtable discussion hosted by The Architect’s Journal echoed this conclusion, stating that the “skills shortage remains the most pressing issue facing architecture practices today.” The panel went on to explain that architects that are highly skilled in Revit are particularly in demand.

In the near future, the outlook for those employed in architecture is good. Worldwide, populations continue to increase rapidly. The United Nations Department of Economic and Social Affairs predicts that by 2030, the population will rise to 8.5 billion and will reach 9.7 billion by 2050. Pair this with a trend toward urbanization, and we can conclude that the built environment will have to expand dramatically to house, employ, and provide goods and services for this increase in population. The Bureau of Labor Statistics predicts that demand for architects will increase by 7% through 2024 and those “with up-to-date technical skills—including a strong grasp of CADD and BIM—and experience in sustainable design will have an advantage.”
As demand for built space grows and design firms continue to have difficulty filling positions, training programs to help refine Revit skills and take advantage of sustainable design technologies will be the key to quickly transitioning architects from the entry-level to managerial-level pools where they are needed most.

Creative Arts

There’s no question that degrees in tech-forward creative fields like animation and game design are hot. But, with audiences craving graphics that are more and more spectacular, there is greater demand for highly-skilled animators than there are employees to fill them.

The UK is particularly desperate for employees in the creative arts. There are currently about 2.1 million people working in creative jobs in the UK. But, a report shows that the creative sector requires another 1.2 million employees, more than half those currently working in the field, by 2022. The report goes on to point out that the skills gap exists “particularly in relation to IT and software skills.”

Paul Franklin, who has won two Oscars for Best Visual Effects on *Interstellar* and *Inception* and was nominated for *The Dark Knight*, explains that, “we are looking for a new type of artist, who… …at the very least has an understanding of what can be done with hardware and software. It’s very difficult to find staff with the right skills.” The shortage of qualified animators is so widespread that 47% of video game, animation, and visual effects companies in the UK report that they have trouble filling high-skilled positions.

While there is demand for high-tech jobs in the creative arts right now, the truth is that it is an incredibly difficult field in which to project future demand. In the creative realm, in particular, technologies are evolving quickly. We don’t yet know which innovations are going to become true game-changers.

Virtual reality and augmented reality, for example, could live up to the hype and upend everything from advertising, to entertainment, to education. If this comes true, there would suddenly be an abundance of animation and programming jobs as companies jockey to produce more innovative content. Or, these technologies could simply fade away, like virtual reality did in the ‘80s when it was first tapped to disrupt the entertainment industry. The same can be said for 3D advertising, real-time rendering, and many more technologies.

As of this moment in time, it is fair to conclude that we really don’t yet know the full scope of the creative arts skills gap, but it could turn out to be substantial.
What Does the Workforce Skills Gap Mean for My Company?

In short, companies suffering from a skills gap waste time and money. Recruiting, hiring, and training new workers is expensive. Plus, there are intangibles, such as the loss of engagement and cultural impact amongst existing employees when a respected team member leaves the company that have a real, but difficult to calculate, cost. Combine this with the fact that a new hire can take as much as two years to acquire the same level of productivity as the employee he or she replaced, and you can see how quickly the costs add up.\textsuperscript{xix} A study by the Center of American Progress found that the median cost associated with replacing an employee was equal to 21\% of his or her salary.\textsuperscript{xx}

While the costs of hiring a new employee that we have already laid out are significant, they really represent a best-case scenario. For positions that are difficult to fill because of a workforce skills gap, the cost to an organization is compounded even further. A Career Builder survey conducted by Harris Poll found that, on average, companies lose $14,000 every three months that a position remains vacant.\textsuperscript{xxi} As employers struggle to find qualified employees, a 12-week vacancy is hardly unusual. In fact, approximately 35 percent of employers have positions open for more than three months,\textsuperscript{xxii} and more than half of employers have jobs open that they have been unable to fill due to a lack of qualified applicants.\textsuperscript{xxiii} In 2016, it was estimated that there were about 5.6 million jobs left open because they were unable to find candidates with the requisite skills.\textsuperscript{xxiv}

Research has shown that there are not major shortages of workers with engineering and technical skills. This means that the workforce skills gap is primarily the result of rapidly changing technologies, not a lack of formal education. Yet, “employers still have real difficulties hiring workers with the skills to deal with new technologies.” \textsuperscript{xxv} It is fair to conclude, then, that supplemental training rather than traditional education is the real answer to filling these positions.

Harnessing Corporate Learning and Development to Bridge the Skills Gap

As jobs remain unfilled, employers are watching their productivity drop and their costs escalate. Employers simply can’t wait for enough students to graduate, enter the workforce, and gain the necessary experience to fill these vacant jobs. Instead, employers need to look beyond traditional educational solutions and stop depending on the schools. By revamping internal training programs and traditional hiring practices, employers can help diminish the effects of the workforce skills gap on their organization.
Here are five ways that employers can start bridging the skills gaps now:

1. **Embrace competency-based hiring.** Under this method, in addition to evaluating an applicant's current skills and knowledge, the hiring manager also considers “soft” skills, such as aptitude and behavior. The driving philosophy behind competency-based hiring is that it is easier to teach skills than it is behaviors. Not only does this method of hiring expand your pool of possible applicants considerably, it has been shown to improve employee retention and produces employees that are a better fit for a company’s unique culture.

2. **Build a robust in-house training program.** The best way to get rid of the workforce skills gap is to simply teach those skills yourself. As we have seen, the lack of technology and computer skills are, across multiple industries, the number-one cause of the workforce skills gap. Luckily, these skills are highly teachable. Pair software and computer learning and development with hands-on training to fill gaps faster. Nearly all (94 percent of) surveyed executives polled by Deloitte agreed that internal employee training and development programs are the most effective skilled production worker development strategies.

3. **Provide plenty of opportunities for continued learning and development.** Society is mobile, distractible and, above all, lives in the moment of need. Providing knowledge when and where users are open to consuming makes learning easier, even entertaining, and certainly more convenient. When the content is highly searchable, non-linear and presented in small, atomized units, you have an even greater chance of successfully upskilling your workforce.

4. **When possible, utilize apprenticeships to build a highly-skilled workforce.** Like internships, apprenticeships offer an opportunity to not only open a young worker’s eyes to the possibilities of a career in manufacturing, construction, and creative fields like 3D animation, they also offer a chance to develop the skills necessary for the position in a real-world environment.

5. **Take advantage of certification programs and gamification.** We’ve already seen so much success with this from the Autodesk Certified User and Autodesk Certified Professional designations. Certification programs, whether they are industry-wide or internally created, can set a benchmark of skills mastery that needs to be obtained for a position. To make it more interesting for your employees, consider pairing the certification process with elements of gamification. Encouraging your trainees to work toward small achievements, such as new levels or badges, can keep learning fun. Adding in a little friendly competition by maintaining a leader board can get even better results.

“By revamping internal training programs and traditional hiring practices, employers can help diminish the effects of the workforce skills gap on their organization.”
Providing access to a multitude of training and educational resources from self-direct learning to skills assessments and mentoring is a must for future success. Building your own training program, complete with apprenticeships, certifications, and around-the-clock access to learning opportunities allows you to customize how your employees learn, ensuring that new hires will leave the training program with full knowledge of your individual workflows and procedures. The more engaged your employees are, the less likely they are to look for other opportunities elsewhere. Being able to retain employees further reduces your skills gap risk.

A robust training program allows you to hire based upon characteristics other than formal education and current experience. This increases the pool of possible applicants considerably, and gives you more leeway to hire employees with greater future potential.

Whether you are scaling up an existing training program or implementing it from scratch, expanding your learning and development can seem like an overwhelming endeavor, but it doesn’t have to be. There are plenty of resources available to help organizations supplement their in-house training with content from experts in their fields. Combining online learning with hands-on training is the best way to ensure that you can keep your workforce agile and adaptable, allowing you to find new employees or fill gaps internally and avoid the loss of productivity that results from the workforce skills gap.
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