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The Changing Face of Design and Make Labor: 10 Future of Work Trends and Predictions for 2025

Technology has always been a catalyst that's changed how people work—here are 10 upcoming advances that will transform the labor market across Design and Make industries.

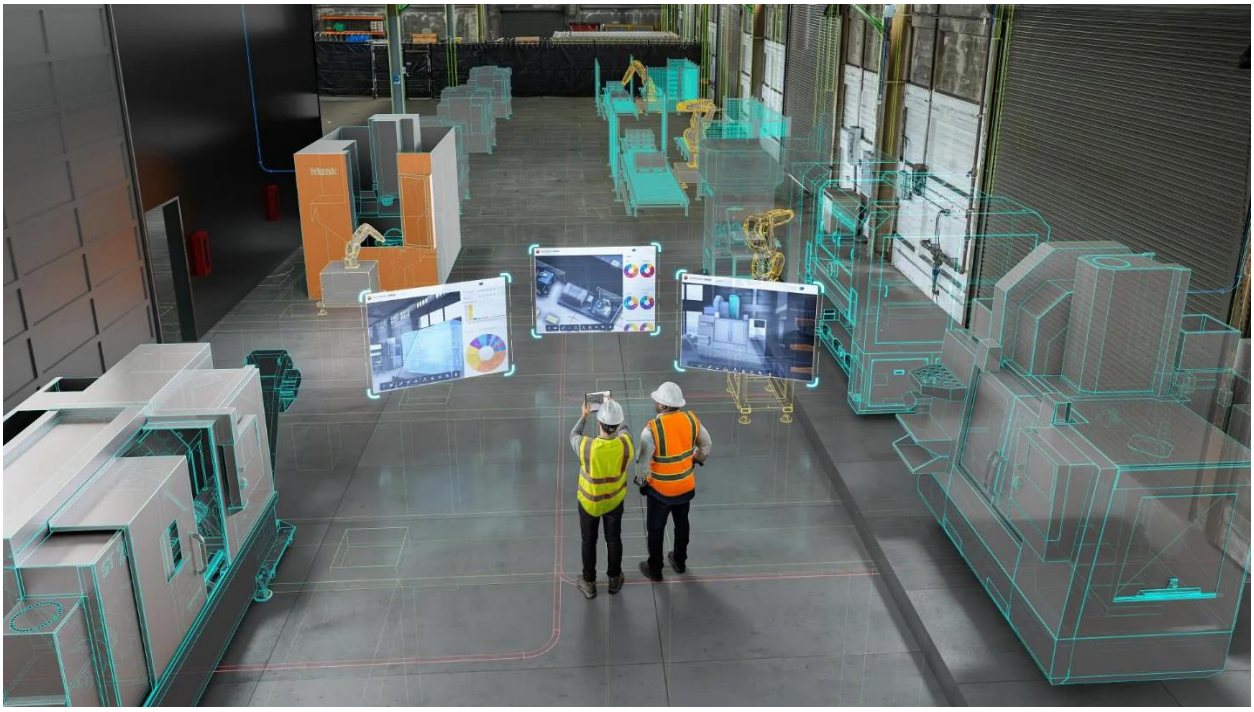
November 14, 2024 | Kimberly Holland

- **As technology evolves, so will the nature of work—increasing the chances of delivering projects on time, and on budget.**
- **Industries like construction and manufacturing are adapting to changes in technology, figuring out ways to address skills gaps and a lack of diversity.**
- **The importance of having advanced technology skills and understanding green initiatives will play a large role in the future of work.**

The Greek philosopher Heraclitus is believed to have said "the only constant is change," an apt statement for many elements of life—but especially work. Historical advancements in work and labor have all felt revolutionary or even destabilizing in the moment, but embracing change, responding to it, and growing from it has been the success story of many companies. Several of the world's most well-known brands have withstood the introduction of the assembly line and the personal computer. Now there's head-to-head with artificial intelligence and extended reality.

That's why it's important for industry leaders to understand both today's needs and tomorrow's trajectory. They may not resemble what is known and practiced today—and that's okay. Adapting to constant evolution helps you develop your business or work responsively. Today's trends offer insight into the changes leaders and industries should pay attention to now – to thrive in the future.

1. AI arrives in construction



The construction industry is increasingly adopting ANNs and other AI tools to help with planning, projections, and analysis.

Discussing the use of artificial intelligence (AI) in the future of construction technology can cause a stir, raising concerns about the possibility that AI-empowered robots will overtake human capabilities. The truth is, AI is present in construction now, and it is necessary to meet the growing demand for infrastructure globally. It's uniquely suited to make human work more efficient, safer, and more creative.

AI tackles many of the tasks humans also do—including data and risk analysis, and complex scheduling—but more efficiently. For example, during the preconstruction phase of a project, a lot of important tasks must be completed, often in quick succession. These tasks include site analysis, design selection, feasibility studies, and resource allocation planning. Humans can do these tasks, but AI can too—often faster and cheaper—increasing the likelihood of projects staying on time, and on budget. Some construction companies have started using artificial neural networks (ANNs), a subfield of AI, to predict potential cost and scheduling challenges. These ANNs use the organization's historical data to generate realistic timelines and budgets for future projects.

Using AI for these data-heavy tasks lets humans focus on and excel in areas of construction where AI simply cannot perform. AI cannot replace the collective organizational knowledge that people bring to projects like informed decision-making, collaboration, and interpersonal connection. As much as AI can learn from algorithms and large sets of data, it can't build empathy with customers, replicate human ingenuity, or successfully pitch a bid.

"It is people who are behind technology, so the impact of AI on the workforce is ours to define," says Rachel Korberg, executive director and co-founder of the Families and Workers Fund. "When business leaders harness AI in the right ways, it can—and in some cases already has—transform careers and create greater opportunity and safety for millions. For example, generative AI can identify patterns in when and how on-the-job injuries and accidents occur to help prevent them."

She adds that AI can also transform hiring. "Two-thirds of adults in the U.S. do not have a college degree and have tremendous, often overlooked talent. AI hiring tools can help companies assess job candidates for their potential versus their degrees and can be used to root out racial, gender, and other biases. But on the flip side, similar tools could be used to entrench bias and make it even harder for women and people of color to get hired in industries like construction where they're historically underrepresented."

"Ultimately, AI has tremendous potential to help recognize and reward overlooked talent, strengthen our workplaces, and right historical wrongs," Korberg concludes, "but it's up to business leaders to ensure it is used for these aims."

2. New careers emerge in connected infrastructure

Learning to work with burgeoning technologies is not new. Personal computers, robotics, and cloud computing all revolutionized the Design and Make industries. The technologies of tomorrow are creating entirely new sectors of work—jobs that don't currently exist will be essential roles in the future. The time is right for workers and employers to reimagine the future of working, focusing on upskilling so gaps between available jobs and people to fill them do not continue to widen.

As an example, Deloitte highlights the job of a digital twin engineer. Currently, internet-connected devices collect a bounty of data for companies. Some of that data is harvested to improve the performance of the devices themselves. The work of a digital twin engineer is to think expansively about how connected devices can engage and collaborate with one another. Then, the engineer can set up virtual representations—digital twins—of these devices and conduct experiments, gather data, and produce insights for better technologies, products, and services.

This type of job leads to value for customers with better, smarter, and more advanced products. But it also makes the work of the company, and specifically the engineers, more meaningful and productive.

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3. Extended reality (XR) uses will grow—as will the demand for people with XR skills

Extended reality has tremendous potential as a training tool.

The future of workplace training may go beyond using AI and employee-led training. It may look slightly more immersive, thanks in part to the growing use of extended reality (XR) devices.

Extended reality (XR)—the umbrella term for augmented reality (AR), mixed reality (MR), and virtual reality (VR) technologies—goes beyond fancy headsets. Virtual eyeglasses can offer employees an augmented training regimen where they're a "part" of an experiment or test, learning by practice. This includes space for questions, on-the-spot retraining, and even teachable moments when errors occur. This technology can also increase equitable opportunities for potential employees, removing barriers for those who need more flexibility in their training or face challenges from traditional learning techniques.

XR training can also give people seeking reskilling or upskilling more realistic experiences without the constraints of in-person job training. VR surgical simulation has been used for almost a decade by surgeons and residents who need hands-on training but have to limit exposure to radiation. Currently, many apprentice-style programs require a person to be in a specific physical location for training or testing. With XR technologies, people outside cities and traditional education hubs can have the same opportunities.

The media and entertainment industry has yet to be transformed by XR technology. However, as the adoption rate of XR hardware like the Meta Quest and the Apple Vision Pro increases, there could be a rush to supply immersive and interactive content, games, and educational material for VR and MR headsets. Studios wanting to cash in will have to be familiar with producing XR-specific content, and workers and students wanting to thrive in this space will need XR production skills.

4. Skilled trade roles will go unfulfilled as demand grows

The gap between the advanced skill jobs of the future, like the digital twin engineer mentioned above, and the people to fill those jobs is large—and growing. Already, not enough people possess the skills necessary to fulfill trade and technology jobs, and that gap will widen. In Autodesk's 2024 *State of Design & Make* report, nearly half the surveyed experts see a lack of skilled talent as a major barrier to both top-line and bottom-line growth, Meanwhile, many companies lack the resources to train their workforce: 77% of respondents say upskilling and training is important, but only 38% have the resources to train their employees on the job.

Compounding this problem is what industry experts call the "silver tsunami," a coming labor industry exodus as older employees retire. U.S. Bureau of Labor Statistics projects that "older adults" (65 and older) will account for 57% of labor force growth from 2022 to 2032.

To counteract the silver tsunami, skilled training programs need to keep pace with innovation, something that the nonprofit project-based learning organization Stacks+Joules says has not happened. Stacks+Joules offers a post-secondary training program in computer programming, wireless network management, and building automation/energy management systems. As technology like the Industrial Internet of Things (IoT) becomes more vital in sectors like manufacturing and smart building operations, demand for the skills Stacks+Joules teaches like coding, automation control, and energy management will only increase.

5. The green jobs tsunami will expand

Sustainable technologies and green industries are opening up new areas of opportunity for skilled workers.

The green jobs tsunami isn't coming—it's already here. Industries, leaders, and workers need to understand and utilize sustainable technologies. A LinkedIn report says that workers with green skills or titles have a hire rate 54.6% higher than the overall workforce. And the demand for "green talent" grew twice as fast as the supply of workers between 2023 and 2024.

"We are in the midst of an exciting, once-in-a-generation clean energy and climate resilience transition," Korberg says. "Some of the jobs that will grow include newer jobs, such as workers who install and maintain EV-charging infrastructure, and many long-existing jobs that need to be done in a new way or require millions of more workers, such as engineers and electricians working in solar, wind, grid modernization, and building retrofitting."

But embracing green technologies and sustainable practices isn't a one-off initiative. In the future, workers will have to grasp the entire breadth of sustainability concerns, from the beginning to the end of production lifecycles.

"It will become increasingly important for workers across industries to develop an understanding of climate literacy and how to do their jobs in a more sustainable way," says Efrem Bycer, senior lead manager of public policy and economic graph at LinkedIn. "Every worker on the planet will need to play a role in the transition to a more sustainable economy."

He continues, “All over the world, governments and businesses are investing in net zero. As a result, these new climate policies and commitments are driving demand for ‘green’ jobs, or those that have sustainability at their core and cannot be performed without extensive knowledge of green skills.”

But as with trades jobs, Bycer says the global workforce is not on track to meet the ambitious goals of most companies and countries. “By 2050, there will be twice as many jobs requiring green skills as people qualified to fill them if today’s trends continue. What’s more, global demand for green talent continues to surpass supply—with demand increasing by 11.6% and supply by 5.6% between 2023 and 2024.”

For Bycer, this gap between demand and supply means one thing: opportunity. He says many jobs that are not traditionally thought of as “green” jobs will evolve, requiring relevant reskilling so that the jobs can meet the emphasis on sustainability.

“We see that jobs ranging from software engineers to product designers to head chefs can all be performed in a more sustainable way,” he says. “Employees capable of speaking to the current climate challenges and communicating how their skills apply to larger organizational sustainability initiatives will be much more competitive.”

6. A “quality job” becomes the goal for employees

What will this demand for new employees with advanced skills mean for workers themselves? A lot, it turns out, and it empowers workers to demand that a job be more than just work.

“Today, people aren’t looking for just any job—they’re looking for jobs that enable them to get by, get ahead, and feel agency and belonging at work,” Korberg says. “Demand for talent is high, especially in construction and infrastructure. Research shows that workers are more likely to seek jobs at and stay at companies that provide jobs that enable them to financially support themselves and their families and where they have a chance to advance in their careers.”

Companies that want to be competitive in this new landscape will face choices that can help them better align with the needs of future employees, making them more competitive among highly recruited candidates. These categories, according to Jobs for the Future (JFF), a nonprofit driving transformation around work, include compensation, advancement, agency, and structure.

“Some of the important benefits and job features workers prioritize from companies are paying a living wage, offering affordable health insurance, providing paid time off, and setting schedules far enough in advance, and with employee input, so that workers can plan their lives,” Korberg says. “Companies looking to be more competitive should also consider benefits for childcare, transportation, and mental health. Providing benefits in these areas not only improves employee financial health and may create greater

employee loyalty to a company, but also it accrues to the employer by reducing tardiness and unplanned absences and increasing productivity."

7. Employee-led training moves to the fore

Traditionally, much of the training in jobs has been top-down, with cookie-cutter courses that provide a basic understanding of a job but rarely lean into the specifics—and never into the institutional knowledge of people already performing the job. Future training will look much different as employees push for changes and more creative approaches to sharing knowledge with new hires, training when changing jobs, and communication within departments or groups of a business.

For example, typical video training is one-size-fits-all, expensive to update, and often ineffective at teaching more advanced or nuanced information. Newer, AI-empowered training, on the other hand, will be more adaptive and able to tailor training to specific jobs or tasks. Staff members could also select training that interests them or suits the changing nature of their jobs—especially for new software and technologies they can learn to stay relevant.

Employers should see this shift as a positive. In fact, a 2022 study from *The Manufacturer* found that 80% of manufacturing employees were interested in upskilling in that year; employees eager to learn are likely to want to further their careers and feel greater job satisfaction. In a future job market that will be tighter and highly competitive on both sides, companies willing to invest in employees and their skills will have a competitive edge.

8. Mid-career talent and training gets new investment

Apprenticeship programs offer opportunities for mid-career workers to learn new technical skills.

Pathways to careers will look very different in the future. The emphasis on education has been moving away from classical four-year college degrees for some time, and that shift will only speed up. Perhaps more importantly, this educational revolution will also bring people back into training programs for reskilling or mid-career changes—potential employees who might have otherwise been left behind by the workforce.

On this front, a variety of organizations are making headway. For example, North America's Building Trade Union (NABTU) reintroduced an apprenticeship program that trains workers for highly skilled jobs in technology-driven environments. They are paid for the program and provided many benefits during this time, which is necessary for people of all ages and work stages, but especially for those who are shifting directions but cannot afford the financial hit of starting at the bottom. Other organizations, like Revolution Workshop in Chicago and Jane Addams Resource Corporation (JARC) Rhode Island, offer training and apprenticeship programs for underserved communities, including women and people of color.

Traditional education institutions like California State University, Northridge (CSUN) are adjusting their sails in the winds of change, too. Houssam Toutanji, PhD, PE, FASCE, Dean of the College of Engineering and Computer Science says, "With our new Autodesk Technology Engagement Center, we'll have new labs and spaces that will be game-changers for our students and the community. We're talking about cutting-edge facilities like the High Bay Structural Testing Lab, the Machine Testing Lab, the Fabrication Lab, the Emerging Advanced Materials Lab, the Design Digital Capture Lab, a Makerspace and Discovery Lab, and an Incubator Project Research Lab. These places will allow anyone to get hands-on with the tools and training they need to stay on top of their game."

He continues, "Our ultimate goal is to provide resources and knowledge that position our students, alumni, and community members at the forefront of progress. By fostering a culture of continuous learning and growth, we can build a community that is well-prepared to tackle whatever challenges the future may bring."

9. Skilled trades actively recruit more women and people of color by increasing workplace flexibility

Employers seeking to recruit more women are focusing on flexibility, benefits, and equitable access to opportunities.

Across the skilled trades, there's been little success in increasing diversity with women and people of color, and businesses are suffering as a result.

"The engineering and construction workforce is one of the least diverse in the nation—women and people of color often represent below 10–20% depending on the specific trade or sub-industry," Korberg says. The US Department of Commerce says that a million women were working in construction as of October 2022, but that accounts for less than 11% of the industry's workers. Women also make up less than 5% of skilled trades jobs.

However, Korberg and others believe the roadblocks that prevent these demographics from being a part of the industry are fixable. It will require effort and flexibility on the part of employers as they reimagine workplace architecture and the practices that define their companies.

Korberg points out some workplace practices that can help to usher in this change:

- **Benefits:** Companies should "gather employee input on workplace practices and benefits, and make adjustments as needed (e.g., paid sick days, paid FMLA, etc.)," she says. "Acknowledge and partner with any efforts among workers to gather or share their collective voices and needs with management, whether unionization efforts or otherwise."

- **Scheduling:** Unpredictable schedules prevent workers from having stable, secure childcare, and can also interfere with their ability to create balanced lives that foster their health and wellness. Likewise, many people serve as caregivers for elderly family members; flexibility in scheduling can help them fulfill these obligations without the additional stress of losing work time and income.
- **Representation:** Putting women and people of color in forward-facing roles is important to help companies better engage with new hires and potential employees.
- **Compensation:** If work hours needed for a job fall outside traditional childcare timelines, the company may be able to offer a stipend to supplement childcare so an employee can both maintain their job and secure care.

Global furniture manufacturer Steelcase is adopting several of these practices to build diverse teams and ensure equitable access and opportunity. For example, the Women of Steel program in Pune, India, offers women leadership opportunities in the manufacturing section and provides benefits and accommodations that make it easier for women to join the workforce.

10. University and degree programs innovate to meet rapidly changing needs

College degree programs using industry-standard software help prepare students for tomorrow's workforce.

The start of a career is an important time for successfully launching people into jobs and industries. But that starts with a good education—and having the degree programs to support it.

“Artificial intelligence is transforming not just construction and engineering, but every field imaginable,” says Toutanji. “Within the college, we recognize this shift in our world, and we’ve made it our mission to ensure our students are at the forefront of this technological revolution.”

Universities and colleges like CSUN have to stay ahead of the curve and incorporate training in technology for jobs of the future. Students should graduate knowing how to work with the latest software, engage with the newest robotics, or facilitate research with the most advanced computing technology. “Our mechanical engineering students, for example, work with advanced software like Autodesk Fusion, which incorporates AI for things like design optimization,” Toutanji says. “These types of tools can drive better efficiency, more cost-effective designs, and improvements in structural integrity—skills that are invaluable in today’s engineering landscape.”

As part of a commitment to supporting the future of the Design and Make industries, Autodesk offers students and educators free access to its full software portfolio. Using Autodesk’s AI-powered software in the classroom, students learn skills and gain hands-on experience that prepares them to tackle real-world challenges when they enter the workforce.

Using technology can also influence how instructors teach. “We’re also leveraging AI to enhance our teaching methods,” Toutanji says. “Our Matador Summer Transition to Engineering and Computer Science Program’s utilization of ALEKS, an AI-powered platform for mathematics education, is a prime example. This intelligent system adapts to each student’s learning style and pace, ensuring they build the robust mathematical foundation essential for success in engineering and computer science.”

Industry-college partnerships can benefit both students and employers preparing for jobs of the future. Apple recently funded a $1.3 million Innovation Grant to Howard University’s Department of Electrical Engineering and Computer Science. With this grant, the HBCU opened a state-of-the-art facility to train students in silicon and hardware engineering. This hands-on learning lab will give students real-world experience with the technologies of tomorrow and help fill the skills gap companies will face.

The future of work is one that can embrace technology and a persistent drumbeat of change - seeking bigger and better solutions to the challenges of a complex world. Companies, along with their employees and customers, should eagerly embrace this evolution, not shrink from it. In fact, they can become leaders and innovators in a world that is ready for better, more creative solutions.