

# The Human Centered Future of Work(force Development)

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## Abstract

The future of work has never been more uncertain. Forces spanning automation to climate change will impact the livelihoods of billions of people worldwide. When we only discuss this problem at the level of millions or billions, we miss the human-centered reality of what it means to be an individual worker. Looking at the issues workers face as a “learning problem” vs. a “labor problem” enables us to understand the landscape at an “n of 1” and, at this level, it is evident that traditional workforce development efforts that focus on reskilling are often ineffective, or become quickly redundant.

By shifting our perspective from a labor skills lens (i.e., reskilling through mass content delivery) to a learning science lens (i.e., enabling transformative learning experiences for individuals), we can create a new paradigm. Core learning science concepts such as exploration before explanation, moments of mastery, and situated learning support workers in developing the mindsets they need to navigate an ambiguous future. This could be the difference between marginalized and vulnerable young people becoming trapped in an endless cycle of reskilling and displacement, and becoming active agents able to navigate the future world of work.

## The Future of Work is Changing at a Rapid Pace.

Kyle,<sup>1</sup> a recent high school graduate, attended a large opportunity youth-focused job fair in Seattle to find a job. When asked why he was there, Kyle replied that he was finding it difficult to find a job because he had “no skills.” As we talked, Kyle shared how the automation of farm machinery had disrupted his last job and that he considered this previous experience irrelevant to the customer service positions on offer at the job fair. To overcome this hurdle, Kyle felt that the only avenue open to him was to enroll in a reskilling program focused on customer service retail-specific skills.

Fast forward four years and Kyle has been employed at a nationwide retail company, one that has been making strides in automating their frontline customer service agents. This type of automation has become commonplace across the retail sector, and it has resulted in the contraction of thousands of jobs nationwide.<sup>2</sup> As this trend is only set to continue, and labor economists predict that retail is likely to be one of the hardest hit sectors, Kyle either already has or is likely to face a similar fate again: job disrupted, in desperate need of short term income and feeling as though he lacks all relevant skills.

Kyle's story is becoming an increasingly common one. The world of work is experiencing dramatic changes as it enters what the World Economic Forum has termed the Fourth Industrial Revolution.<sup>3</sup> According to the World Bank, a full two-thirds of jobs in the developing world are at risk of replacement through automation,<sup>4</sup> and in the United States estimates predict about 47 percent.<sup>5</sup> Despite the widespread impacts of this Fourth Industrial Revolution, our educational systems are reminiscent of the First Industrial Revolution. Furthermore, automation and artificial intelligence are far from the only forces reshaping the world of work in the 21st Century.

### **We Have A Learning Problem, Not A Labor Economics Problem.**

The contemporary social narrative blames Kyle's unemployment on the "skills gap" created by these changes in the world of work. That term, although very common since the 1970s, has increased in popularity recently and can be found in several cornerstone Future of Work reports, such as the reports mentioned above and those from the World Economic Forum,<sup>6</sup> McKinsey Global Research Institute<sup>7</sup>, and the OECD.<sup>8</sup> These reports (and many others) span sectors and countries, yet they all assess the future of work through a lens of labor economics. In doing so, they disconnect labor skills from the individual psychological, cognitive, and societal elements that enable learning.

A skills gap centered lens leads to the belief that reskilling is the best option for someone like Kyle to move forward. But what if it isn't? What if it isn't even a good option? We propose that we need to rethink our approach to workforce development and ground that new approach in the learning sciences, human-centered design, and the realities of the future of work. We propose that we approach the future of work as a learning problem, not just a labor problem. To prepare one billion people for the future of work, we have to be able to prepare one person.

### **The Future Of Work Has Outpaced Workforce Development.**

There are many initiatives, spanning corporations, nonprofits, and governments already tasked with reskilling disrupted and vulnerable workers, or workforce preparation in general. But current models leave much to be desired. Traditional approaches usually take the form of reskilling programs like the popular tech boot-camps, or initiatives like the one Kyle went through that are content-driven and focused on getting participants a specific type of job-based on the development of specific didactic skills. Not only can these programs be ineffective at increasing worker hireability and compensation in the short term,<sup>9</sup> but many also train workers in skills likely to be vulnerable to automation within the next five years.<sup>10</sup>

So what is the answer? We have to stop preparing workers for only their immediate next job and the latest in-demand skills. Yes, immediate economic opportunity is critical, but we also have to start preparing them to thrive in a constantly evolving future of work landscape. Navigating that landscape will require workers to be adaptable, creative, and able to navigate ambiguity. In the language of the learning sciences, workers will need self-efficacy and a growth mindset to be able to analogically reason<sup>11</sup> (or transfer<sup>12</sup>) how their existing skills apply to new and different contexts.

Self-efficacy, a key component of the larger concept of agency, is the difference between trying and not trying. It influences what problems people choose to take on, how much effort they put towards solving those problems, and their resilience to adversity and failure.<sup>3</sup> As Albert Bandura, who coined Self-efficacy, puts it "[i]f people believe they have no power to produce results, they will not attempt to make things happen."<sup>14</sup> The volatile nature of the future of work means that workers must be prepared to attempt to make things happen.

A related concept, *growth mindset*, is the belief in the malleability of one's intelligence, abilities, and personality. Its opposition is *fixed mindset*, and the difference between the two mindsets has powerful impacts on how people approach opportunities for learning and improvement. Those with a fixed mindset spend time and effort proving their intelligence and capability and avoiding situations which challenge them or threaten failure. Those with a growth mindset seek out opportunities for self-improvement.<sup>15</sup> Given the rapid shifts in the world of work, a willingness to learn and grow is also essential.

Together these two mindsets support the development of what we see as the essential ability for the workers of the future: *analogical reasoning*. In the context of work, analogical reasoning<sup>16</sup> is the ability to see how existing skills, knowledge, and abilities transfer to new and different types of work. Having a strong ability to analogically reason reduces a learner's need to "reskill." In the case of Kyle, if he can learn analogical reasoning then he will be able to see how what he learned in his past experiences in farming and the retail sector can apply to new work. These mindsets and cognitive abilities can be inculcated in people but are ill-served by curricula that focus on content at the cost of all else. Instead, we must approach them through a pedagogy that encourages the development of self-efficacy, growth mindset and analogical reasoning. This involves creating moments where learners can experience mastery, see accomplishment modeled by their peers, receive encouragement, and feel comfortable to challenge themselves.<sup>17</sup> A curriculum and pedagogical style designed to deliver content as quickly as possible does not afford these key transformative moments and ultimately only deliver content retention and not the development of new mindsets and cognitive abilities.

### **We Need To Prioritize Pedagogy That Considers The Science Of Learning.**

Decades of research in the learning sciences have given us key principles that can be built into workforce development programs. For example, in our class, Design Thinking Studio,<sup>18</sup> at the Stanford University d.school we prioritize learners exploring a space or task before explaining it to them. This lets students engage in the essential acts of sense-making—constructing for themselves the physical, social, and symbolic worlds they occupy.<sup>19</sup> This pedagogical technique create the right conditions for a learner to develop a growth mindset and self-efficacy, in part because learners then understand their learning experiences as something they have ownership of and can actively influence.<sup>20</sup>

This approach is also applied by a workforce development initiative, Designing Your Success (DYS). DYS applies design thinking to life design for those at risk of job disruption.<sup>21</sup> In addition to exploration before explanation pedagogy, DYS creates learning environments that prompt analogical reasoning. For example, learners are asked to create skills profiles of themselves and to generate three possible futures that show how these skills profiles could be applied. Understanding that learning is an activity embedded in contexts, environments, and people require programs to think not just about the surface level of content but think critically about the design of learning spaces and experiences.

### **Let's Change The Current Paradigm.**

The question of how to prepare the workforce for an uncertain future can seem intractable. Workers caught in the shifting tides of the modern world of work can feel robbed of their agency, and policy that protects their rights and empowers their choices is essential.<sup>22</sup> But not all essential changes happen at the policy level. Through the lens of the learning sciences, we can approach shifts in work from the perspective of individuals; from the point of view of Kyle. But to give Kyle a more inclusive future, we need to change the current paradigm: from a labor problem to a learning problem, from billions of people to one, from content to pedagogy, and from skills to mindsets and cognitive abilities.

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<sup>1</sup> For his privacy we have changed Kyle's name.

<sup>2</sup> Gretczko, M (2018) The future of work for retail?, Deloitte LaborWise, Stamford CT

<sup>3</sup> Schwab, K. (2016). *The fourth industrial revolution*, Crown Business, New York.

<sup>4</sup> Weltbankgruppe (Ed.). (2016). Digital dividends. Washington, DC: International Bank for Reconstruction and Development / The World Bank.

<sup>5</sup> Frey, C. B., & Osborne, M. A. (2015). *Technology at work: The future of innovation and employment*. Oxford and New York: University of Oxford and CitiGroup.

<sup>6</sup> World Economic Forum (2017) The future of jobs report, Geneva

<sup>7</sup> Laboissiere, M., & Mourshed, M. (2017). Closing the skills gap: Creating workforce-development programs that work for everyone.

<sup>8</sup> Ibid. OECD

<sup>9</sup> Goldstein, A. (2017). *Janesville: an American story* (First Simon & Schuster hardcover edition). New York: Simon & Schuster.

<sup>10</sup> Wilson, G. (2017). Building a new mythology: The coding boot-camp phenomenon. *ACM Inroads*, 8(4), 66–71. <https://doi.org/10.1145/3132706>

<sup>11</sup> Bartha, Paul, "Analogy and Analogical Reasoning", *The Stanford Encyclopedia of Philosophy* (Spring 2019 Edition), Edward N. Zalta (ed.)

<sup>12</sup> Pea R. D. (1987), Socializing the knowledge transfer problem, *International Journal of Educational Research*, Volume 11, Issue 6, Pages 639–663

<sup>13</sup> Bandura, A. (1997). *Self-efficacy: the exercise of control*. New York: W.H. Freeman.

<sup>14</sup> Ibid.

<sup>15</sup> Dweck, C. S. (2008). *Mindset: the new psychology of success* (Ballantine Books trade pbk. ed). New York: Ballantine Books.

<sup>16</sup> Bartha, Paul, "Analogy and Analogical Reasoning", *The Stanford Encyclopedia of Philosophy* (Spring 2019 Edition), Edward N. Zalta (ed.)

<sup>17</sup> Bandura, *ibid.*

<sup>18</sup> See information on our class <https://dschool.stanford.edu/classes/design-thinking-studio-spring>

<sup>19</sup> Forshaw, T. (2019). Design your (educational) design work series #1: Exploration before explanation.

<sup>20</sup> Yeager, D. S., Romero, C., Paunesku, D., Hulleman, C. S., Schneider, B., Hinojosa, C., & Dweck, C. S. (2016). Using Design Thinking to Improve Psychological Interventions: The Case of the Growth Mindset during the Transition to High School. *Journal Of Educational Psychology*, 108(3), 374–391.

<sup>21</sup> New Sector Alliance (2019) Designing Your Success (DYS) Fellowship.

<sup>22</sup> Marx, Karl (1844). "Comment on James Mill," *Economic and Philosophical Manuscripts of 1844*