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Perspectives

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Economic Commentary

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Recently, I had the opportunity to speak to two different groups of educational leaders about the implications of artificial intelligence on employment and global economies, principals and superintendents of K–12 systems as well as leadership in post-secondary community college systems. I was able to share with them some relevant information produced by the global consulting firm McKinsey. Annually, McKinsey presents to their Global Institute issues that they think will impact the global economy in the forward period of time. Their research findings were summarized in a January 2017 publication titled "A Future That Works: Automation, Employment and Productivity." This executive summary was later followed by their December 2017 publication titled "Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation." For those with a strong appetite for labor statistics (I admit to being one of those), the study in its entirety is very interesting and somewhat provocative. As you can imagine, the implications of artificial intelligence are profoundly and simultaneously positive and negative. This holds true for the very nature of work and therefore how we prepare future generations. The velocity of change in AI has significant challenges for our current workforce as well.

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McKinsey's research suggested that almost half of the activities that people are currently paid $16 trillion in wages to do in the global economy have the potential to be automated, using and adapting currently demonstrated technology. Their research included analysis of 2,000 work activities across 800 occupations. It is often difficult to get our arms around large numbers, and most of us don't deal in trillions of dollars on a regular basis, but to put the figure quoted in the McKinsey study ($16.0 trillion) in perspective, the entire United States Economy just crossed over that amount in 2016. Further, their research suggested that the forecasted automation through artificial intelligence could take place as soon as 2030.

Adoption of automation generated by forms of artificial intelligence will be determined by many factors to include technical, social, economic and demand driven inputs. The ability to replicate work and outcomes is, by itself, not enough to create change in the nature of work. Change initiatives and change management occur when the benefits of doing so have increasing push or pull values. Is the autonomous vehicle advancement being driven by technology, or is the societal and economic push for autonomous vehicles driving the technology advancement? Forecasts of automation have been unusually suspect given the overarching assumptions by most labor economists that the ability to transfer technology digitally allows for rapid replacement of humans with robots, especially in jobs that are both physical and predictable. It isn't that the assumption has proved false, rather it is the duration of the change cycle that has missed the mark. McKinsey's data offers a prediction that we will see an increasing velocity of change in the physical and predictive job classifications, and labor statistics seem to validate that perspective. Artificial intelligence is not absent on the shop floors of global assembly lines; rather, the artificial intelligence is being used on the shop floor by human labor for enhanced productivity (fewer hours of labor producing more output), safer industrial practices, fewer lost time injuries and better worker health. As demands for even greater productivity, economies of production scale and workplace safety grow, the next phase of artificial intelligence will appear as the human component of predictable and physical is eliminated.

The assumption that lost jobs (as in type of work) will not be replaced by new job classifications has proven, over the history of our economy, to be a false one. Robots have been a part of the manufacturing and assembly line process for many decades. While it is true that robotic welders have replaced human assembly welders, the advanced manufacturing processes of engineering, mechanical solution application, logistical software integration, materials selection and fluid dynamics necessary to create and develop the robotic welder also created career pathways and jobs that previously did not exist. Headline news in agricultural communities in our country during the 1950s claimed that the loss of agricultural jobs in our country would be irreplaceable, and much of that same sentiment has been prevalent in discussions about the loss of assembly jobs within many manufacturing sectors. The individual human condition and challenge cannot be ignored in these large shifts in labor demands and dynamics. We know from studies of displaced workers that, if effective resources of retraining are not applied promptly to the workers' new status, the chances of a successful transition to steady employment at comparable wages diminishes rapidly.

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Given the assumption of the growth in artificial intelligence as well as a growth in the velocity of adaptation into the work place, how does public policy enhance opportunity for both the preparation for the workplace of the future as well as the development of effective transition resources for the current generation of workers facing job skill obsolescence?

Unfortunately, our history of doing both of the above is not great. While the United States spends the highest amount on K–12 education among OECD (Organization for Economic Cooperation and Development Countries) we are next to last in our federal and state dollars supporting post-secondary education. Our federalist democracy doesn't facilitate central planning when it comes to education. Unfortunately, artificial intelligence cross cuts not only country borders, but also state boundaries and zip codes. The advancement, and in fact proliferation, of artificial intelligence in all that we do requires that our solution to workforce preparation and training be aimed at that very broad and global market place. It is no longer true that if your zip code resides in the industrial midwest that you will somehow be insulated from shifting workplace dynamics created in Freiberg, Germany or any other place on our globe. Additionally, your access as a citizen to education and training to adequately prepare you and your children should also not be zip code dependent.

Access to information needs to be elevated to the status of a civil right. Those with information have power and those without it lose ground every day. The ability to have and use data is powerful and is often referred to in socioeconomic writing as the information or knowledge class. The research compiled by McKinsey for its Global Economic Conference in January 2017 was not all negative. While it identified the labor dynamics of jobs lost due to AI, it also laid the foundation for the opportunities of jobs changed and jobs gained. The important and potentially liberating information for educators was focused around the job classifications that have a far more difficult time being automated. As I read the lists of those jobs, I couldn't help but ask myself, wouldn't children and parents be much better off knowing the future that was before them rather than adjusting to it when it "happened to them" in real time? Focusing on that list of jobs also confirmed to me that the preparation for them required access to information at an early age, and having the ability not just to read, but to translate the reading to lifelong learning. In both cases it is also clear that if we are to close the gaps between those that have opportunity and those that don't, our challenge in the global workplace of the future makes the task even greater. I am reminded of that almost daily, now that I am a grandfather to four precious souls. I am amazed at how they are attracted to information devices and that how, at a very early age, they begin the process of cell phone and iPad manipulation. Within brief periods of contact they intuitively seek out responses. The reality is that they have grandparents and parents who are of the knowledge and information class and as such have a head start on the foundation that is required to be built for all current and future generations. Access to the McKinsey Global Study is available to all on the internet (https://www.mckinsey.com). I highly recommend it.