ADDRESSING THE INDUSTRY 4.0 SKILLS GAP

Many of us have heard the phrase "Industry 4.0" as it relates to the next wave of manufacturing, but what does that mean for today's CTE teachers and students when trying to address the skills gap and evolution in teaching methodologies?

Industry 4.0 is a paradigm shift to integrate the Industrial Internet of Things (IIoT), artificial intelligence (AI), robotic process automation, cloud computing and analytics, and other new technologies not just into the production process but throughout all operations. It creates new levels of efficiency, predictability, and responsiveness not previously possible, which in turn raises a company's quality and customer satisfaction.[i] Manufacturers, i.e., the future employers of today's students, already recognize the value of integrating Industry 4.0 methodologies into their business models. The MPI Group found 63% of companies report increased profitability due to incorporation of Industry 4.0 technologies and approaches, and 61% say it's a competitive differentiator. [ii]

However, 80% of those same companies also say it is either somewhat difficult, very difficult, or impossible to find skilled workers. The skills gap is very real, and industry partners such as Intel are calling on the educational community to shift teaching strategies "so students move beyond remembering and understanding a given curriculum topic to learning how to apply, analyze, and create, using what they learn in the classroom." [iii] Further, they see personalized learning with a range of concurrent teaching modalities that allows for individual time with the teacher as a means to achieving this goal.

We at LJ Create have heard this feedback from manufacturers, and have elevated our content and instructional model to allow for more personalized pacing, to bring greater awareness to new career options, and to build problem-solving skills alongside the technology-based Industry 4.0 skills lessons. Our Industry 4.0 Career Pathways program, for example, provides

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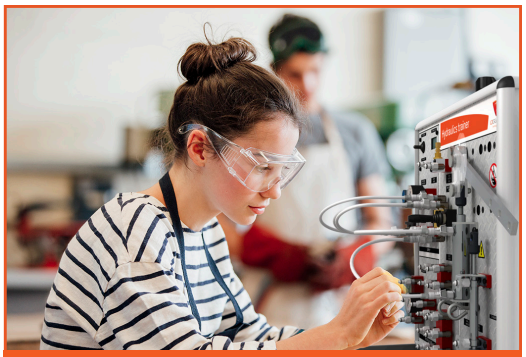
middle and high school students the opportunity to explore technical concepts such as sensors and control systems, data analytics, and the efficient utilization of resources across a range of industry sectors, while providing them with the skills they need to succeed in high school, college, industrial skills programs, and industry certification courses.

Industry 4.0 initiatives and digital transformation efforts are everywhere. In fact, according to the International Data Corporation (IDC), worldwide spending on the technologies and services that enable digital transformation —despite all the global supply chain constraints— was forecast to be $2.3 trillion in 2023, and to reach $3.4 trillion by 2026. [iv] While this does mean that manufacturing companies are feeling some pressure to determine how Industry 4.0 fits into their business models, 95% of manufacturing industry CEOs said they believe technological disruption is an opportunity and not a threat. [v] Herein lies the opportunity for teaching the next wave of students, and preparing them to be leaders in the Industry 4.0 era.



CTE and STEM curriculum must reflect the shift towards an empowered, technically-skilled workforce, working to find unique solutions to open-ended scenarios.

The next generation of workers will need to bridge the skills gap and meet manufacturers' increased need for collaboration between personnel, and set a holistic strategy to gain a competitive advantage using transformative Industry 4.0 methods and technologies. [vi, vii] In fact, in a 2021 survey of over 400 corporations, approximately 46% of manufacturing plants reported that a majority of their production employees worked in an empowered or self-directed team environment. [viii] As an education-first company, we at LJ Create understand that CTE and STEM curriculum must reflect this shift, and so have incorporated more lessons where students work collaboratively to find unique solutions to open-ended scenarios, reflecting the problem-solving that is required in today's work environment.

"The Fourth Industrial Revolution (Industry 4.0 or 4IR) has given teachers what might be the greatest responsibility of our time: to evolve teaching strategies so they can unlock individual student potential and prepare students with the skills needed to shape the future through innovation supported by technology." [ix] With over 40 years' experience in providing complete learning solutions, and an online learning management system containing over 10,000 digital lessons that can be accessed from connected devices worldwide, we at LJ Create are ready to meet industry's demands and help close the skills gap by supporting both students and teachers, helping to make the technology-supported classroom a place for problem solving and creative thinking in the Industry 4.0 era.

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[i] "How manufacturers can adopt digital supply chains." PwC's 2023 Digital Trends in Supply Chain Survey. https://www.pwc.com/us/en/industries/industrial-products/library/supply-chain-digitization-in-manufacturing.html

[ii] "Manufacturing a Post-Pandemic Future: MPS 2021 Manufacturing Study Executive Summary." The MPI Group. 2022.

[iii] "Preparing to Teach in the 4th Industrial Revolution." Intel. June 2023. https://www.intel.com/content/www/us/en/education/teaching-strategy/teaching-4th-industrial-revolution.html

[iv] "IDC Spending Guide Sees Worldwide Digital Transformation Investments Reaching $3.4 Trillion in 2026." 26 Oct. 2022. International Data Corporation (IDC). https://www.idc.com/getdoc.jsp?containerId=prUS49797222

[v] "The Ultimate Guide to Digitizing the Shop Floor." Master Control. 2020. www.mastercontrol.com

[vi] M. Götting et al., "Methodology and case study for investigating curricula of study programs in regard to teaching industry 4.0," 2017 IEEE 15th International Conference on Industrial Informatics (INDIN), Emden, Germany, 2017, pp. 533-538, doi: 10.1109/INDIN.2017.8104828.

[vii] "Industry 4.0: A Guide For Digital Transformation In Manufacturing." Industry Week. 2023.

[viii] "Manufacturing a Post-Pandemic Future: MPS 2021 Manufacturing Study Executive Summary." The MPI Group. 2022.

[ix] "Preparing to Teach in the 4th Industrial Revolution." Intel. June 2023. https://www.intel.com/content/www/us/en/education/teaching-strategy/teaching-4th-industrial-revolution.html