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Addressing the skills challenge with P-TECH schools

IBM Institute for Business Value

Six years to success

In six short years, a highly innovative nascent school reform is demonstrating significant scale and promise. What began as a high school redesign demonstration in one school in Brooklyn, NY in September 2011 has now reached 70 schools across six US states, Morocco and Australia, with about 30 additional schools planned in new states and countries within the year.

Changing collars

The Pathways in Technology Early College High Schools (P-TECH) 9-14 School Model is a new public education paradigm. Within six years of starting ninth grade, P-TECH enables students to graduate with both a high school diploma and an associate degree. The degrees are in fields that have weight in the 21st century economy, such as IT, healthcare and advanced manufacturing. Better yet, students gain skills and real-world experience to continue their studies or step into well-paying “new collar jobs.”

IBM Chairman Ginni Rometty coined the term “new collar” in response to the growing number of competitive jobs in economic growth fields that require more than a high school diploma, but not necessarily a bachelor’s degree. These jobs emphasize academic and technical skills, along with professional competencies such as critical thinking, collaboration and communication.

The challenge for business and government leaders is building the talent to fill these jobs. P-TECH represents a focused and structured response.

The skills crisis in numbers

The skills crisis is a global phenomenon. In a 2016 survey of more than 5,600 global executives representing 18 industries and 48 countries, including 800 leaders of government institutions and 1,500 from higher education, just 60 percent of US industry executives said they believe new employees recruited in local labor markets have the requisite skills. Only 62 percent said secondary schools are successfully preparing individuals with skills needed to compete upon graduation. Even fewer, 57 percent, said higher education institutions are successful at this task.¹ The surveyed executives identified technical core capabilities for science, technology, engineering and mathematics (STEM) as one of the most critical skill requirements for the workforce.²

It has been estimated that the US economy will create 16 million new jobs by 2024 that will require some college education, though not necessarily a bachelor's degree.

Moreover, another IBV study a year earlier showed graduating college students weak in problem solving, communication and adaptability (among others), the very skills required for success in today's workplace.³ More than 70 percent of corporate recruiters said identifying prospects with sufficient practical experience was their greatest single challenge when recruiting from higher education institutions.⁴

These findings are particularly disturbing given current economic trends. It has been estimated that the US economy will create 16 million new jobs by 2024 that will require some college education, though not necessarily a bachelor's degree. Need proof? Of the more than 11 million jobs created between 2008 and 2016, 99 percent went to workers with postsecondary training.⁵ While that was happening, nearly 7 million jobs requiring only a high school diploma disappeared.⁶

Meanwhile, despite an escalating and all-time high 83 percent high school graduation rate, youth unemployment is at its highest level since World War II. College completion rates have stagnated, especially for low-income students.⁷ At community colleges, for example, the full-time student three-year graduation rate for a two-year degree is just 20 percent.⁸ After five years it goes up to 35 percent, but in the same time frame another 45 percent have withdrawn from school completely.⁹ For low-income and students of color, the numbers are significantly lower.

Given this situation, it's not surprising that at the end of April 2017, there were more than 6 million job openings in the US, and many were left unfilled because of a lack of talent.¹⁰

P-TECH tackles the skills crisis

P-TECH was designed to break the cycle of poverty and address skills gaps in the labor force by linking education and workforce development. It offers a seamless pathway from high school to college completion and career readiness. Its goal is to prepare young people for academic achievement and economic opportunity, regardless of their backgrounds. At the same time, P-TECH addresses the skills gap and reinvigorates local economies.

P-TECH schools are partnerships among private industry, school districts and higher education institutions, with support from government. The schools are free, have no admission requirements and serve students from historically underserved backgrounds. High school and college coursework are integrated, so students can take college coursework as soon as they are ready. Without altering the curriculum, coursework is aligned to industry needs. Industry partners provide

workplace learning experiences, which can include mentoring, site visits and paid internships. The partners also commit to making students “first in line” for jobs. They prepare students with real-world skills and inspire them to meet rigorous academic requirements.

P-TECH has been successful with steady growth to 70 schools. In 2017, the first cohort of approximately 100 students from P-TECH Brooklyn finished the full six years of the model. The program had a 53 percent graduation rate, which is four times the on-time national community college rate of 13 percent. To date, 92 students have graduated from Brooklyn and Chicago in anywhere from three-and-a-half to six years. Most students are pursuing bachelor’s degrees, and IBM has hired 15 P-TECH students into the company. Many of these students are attending four-year colleges while working.

The first 16 New York State P-TECH schools launched with state funding in 2014 under the leadership of Governor Andrew Cuomo. In partnership with the State University of New York’s community colleges, 85 percent of students earned college credits and one-third completed two or more college courses after only two years. The pass rate for college courses exceeds 90 percent.

Importantly, at P-TECH schools, students only take college coursework that leads to degrees and no remedial coursework, and are given support to attain a degree. By contrast, 80 percent of students at The City University of New York must take costly remedial coursework, and nearly 90 percent of these students do not get a degree within two years.¹¹

An expanding paradigm

IBM created and provides ongoing curricula support, corporate community engagement, mentoring and thought leadership for P-TECH. Initially IBM worked with the New York City Department of Education and The City University of New York. The effort emanated from the company's commitment to strengthen public education for all students, as well as in response to the massive skills disconnect in the job market.

The structure of high school has remained largely unchanged since agrarian times, yet this reform model has seen rapid expansion. IBM has been working deliberately to share the model with key leaders in states and school districts to encourage replication with a diverse range of corporate sponsorship. Government leaders, beginning with former New York City Mayor Michael Bloomberg, Chicago Mayor Rahm Emanuel and governors such as Andrew Cuomo (New York), Dannel Malloy (Connecticut), Larry

Hogan (Maryland), John Hickenlooper (Colorado) and Gina Raimondo (Rhode Island) have recognized the value of this model. P-TECH lies at the nexus of education and workforce development, includes industry as a full partner and focuses on degree attainment and career readiness.

Of the current 70 P-TECH schools, IBM serves as lead industry partner for eight. More than 400 other industry partners are participating in the model and many are working in consortia.¹² IBM expects the model to grow to more than 100 schools by fall 2018, with replication occurring in existing and new countries and states.

IBM helps ensure the quality and fidelity of the model by providing continuing thought leadership across the network and technical assistance to help support expanding partnerships, including a comprehensive playbook (www.ptech.org) with detailed implementation resources.

Everyone plays a role

P-TECH success requires the contributions of industry, school districts, higher education institutions and government.

Employers: Employers are equal partners in preparing students for college and careers. Employers provide educators with a skills map that details the specific technical and professional skills required for entry-level jobs. This map is then used to align high school and coursework to degree attainment and needed skills.

High schools: P-TECHs are public schools, but are not typical public schools. P-TECH schools are prepared, if needed, to alter traditional patterns of student enrollment, staffing, curriculum and scheduling. They are designed to work hand-in-hand with college and industry partners to help students attain an industry-recognized degree.

Colleges: Colleges work closely with high schools and employers to align and strengthen the relationship between school and work. College deans and faculty identify associate degree pathways, participate in curriculum planning and development, and support students through close collaboration and communication with high school faculty.

Governments: In many countries, education is led by states. State leaders establish an environment that nurtures and supports P-TECH across all six years of the model, including any funding and policy changes that are needed for long-term sustainability and replicability.

P-TECH holds the potential to reinvent education and career preparation for the next generation and new collar jobs. Expanding P-TECH requires the same skills students need: problem solving, communication and adaptability. And it requires one more ingredient – sheer will. You too have what it takes. Being open to enacting this new educational approach more widely is the first step to serving the next generation of students.

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Notes and Sources

- 1 King, Michael, Anthony Marshall, David Zaharchuk. "Facing the storm: Navigating the global skills crisis" IBM Institute for Business Value. December 2016. <https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=GBE03788USEN>
- 2 *ibid.*
- 3 King, Mike; Anthony Marshall; and David Zaharchuk. "Pursuit of relevance: How higher education remains viable in today's dynamic world" IBM Institute for Business Value. June 2015. <https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=GBE03676USEN>
- 4 *ibid.*
- 5 Litow, Stanley, "These schools are a nationwide answer to the skills crisis and high unemployment" *Business Insider*. June 1, 2017. http://www.businessinsider.com/sc/ptech-ibm-coding-jobs-employment-2017-6?cm_mc_uid=44560552579814906280747&cm_mc_sid_50200000=1496254073
- 6 *ibid.*
- 7 *ibid.*; "Public High School Graduation Rates" National Center for Education Statistics. April 2017. https://nces.ed.gov/programs/coe/indicator_coi.asp
- 8 Dynarski, Susan. "How to Improve Graduation Rates at Community Colleges" *The New York Times*. March, 11, 2015. <https://www.nytimes.com/2015/03/12/upshot/how-to-improve-graduation-rates-at-community-colleges.html>
- 9 *ibid.*
- 10 Soergel, Andrew. "How Unskilled Americans Are Creating a 'Crisis' for the U.S." *U.S. News and World Report*. June 7, 2017. <https://www.usnews.com/news/articles/2017-06-07/skills-gap-crisis-threatens-donald-trumps-3-percent-growth-goal>
- 11 Hilliard, Tom. "Degrees of Difficulty: Boosting College Success in New York City" Center for an Urban Future. December 2017. <https://nycfuture.org/research/degrees-of-difficulty>
- 12 P-TECH 9-14 Model. <http://www.ptech.org/schools>