

## Building the Bridge as We Travel

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Manufacturing Renaissance

A case study in developing a program to help reanimate a public school's role in economic and workforce development for the communities they serve

### The People

“Dee, the phone is for you. It’s Andre, he’s says he wants us to find him another job, he’s ready to quit.” Dee takes the phone and for the first few minutes, I watch her listening to the voice on the other end of the phone. I know Andre, he is normally an even-tempered young man, but I can hear the raised volume of his voice through the handset of the phone. He’s upset. Dee thoughtfully acknowledges him on the phone without interrupting him. The rumbling that is coming out of the phone finally stops.

Andre is a skilled machine operator working on the third shift (midnight-8 am) at a local manufacturing company located in the heart of the West Side of Chicago, not far from the high school from where he graduated: Austin Polytechnical Academy (soon to be consolidated into the Austin College and Career Preparatory High School). Andre is also taking classes at a community college as he works towards earning an Associate degree in Mechatronics. Andre is having an issue with his supervisor: he feels like he is being picked-on and singled out unfairly, as if his supervisor wants him to mess up bad

enough to get fired or leave. Andre has been on the job for almost a year.

Andre graduated from high school with four nationally-recognized industry credentials and he was able to become a relatively skilled machinist as a high school student—even winning a state-wide competition programming computerized lathes when he was only a junior. Despite the marketable skills Andre was able to learn while still in high school, he is still a young adult who grew up in a household with parents who struggled with alcoholism, mental illness and poverty. Although Andre had test scores that suggested he was college-ready, he fell behind in keeping on top of all the college, financial aid and scholarship application deadlines that would make it possible for him to go straight into college after high school. Thankfully, however, he had real skills to qualify him for an entry-level production job in manufacturing.

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The woman who was speaking on the phone with Andre, Dee Dee, works as an Industry Coordinator. She has the ambitious job of recruiting local manufacturers to partner with the program; organizing a variety of work experiences including job shadowing, Spring Break internships and summer jobs; and helping participants prepare and successfully complete these work experience opportunities. For those who want the opportunity to work full-

time after high school in manufacturing, Dee Dee will help them both get and keep a job.

Dee Dee tells Andre what he is experiencing—while difficult,—is normal. Regardless of what sector we work in, we’ve all had the experience of working under a supervisor that we did not like. Quitting suddenly will be the most limiting option, given the uncertainty of when he’d start another job and the likelihood of having to start all over, working his way into another company. Dee Dee commits to working with Andre on how to raise this issue with both the supervisor as well as the HR Director of the company as a first step. Depending how these meetings go—, which will include a discussion exploring his role in contributing to the challenges at work—Andre, will be given the informed cues he needs to make a thoughtful decision of whether to stay or begin the job search for another job that may be a better fit. Either way, he stays in control of the situation and, in control of his own professional development. Given the tone of the conversation I’m able to overhear, it seems as if Andre has calmed down and has agreed to the process that Dee Dee has suggested.

## The Context

This phone call took place January 13, 2016 within the Manufacturing Connect program offices which resides in the Austin High School Multiplex on the West Side of Chicago. It’s not often you hear of high school graduates calling their high school for career advice. However, high schools, with some thoughtful planning and coordination with certain public and private sector stakeholders, could provide career and college support services for their alumni who may embark upon a number of different career paths.

Most high school graduates stay close to home to attend college and especially so if they

choose to work.<sup>5</sup> Despite the real benefit of a college education in terms of potential lifetime earnings, according to the Harvard Graduate School of Education, most young adults with a high school diploma or GED do not finish either a two- or four-year college degree, and of those who do complete their degrees, half of those end up underemployed, as their occupational or educational training is not a good fit for today’s labor market.<sup>6</sup>

This is in direct contradiction to the predominant educational assumption that our public education system is designed to help most young people get a college education and access gainful employment. Although that may have been the goal, it has never manifested in reality—the truth is that too many young people end up unprepared and unable to access career-track employment that can allow for a meaningful and fulfilling quality of life—one synonymous with what we regard as being part of the middle class.

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What we do have is a situation where high school graduates aren’t just falling through the cracks of the system, they are running clear off the cliff into the canyon between high school

<sup>5</sup> “Going Away to College: Data Dive on 350,000 HS Grads,” *Niche.com*, 2014, <https://ink.niche.com/going-away-college-data-dive-350000-hs-grads/#/>.

<sup>6</sup> Symonds, William C., Robert Schwartz, and Ronald F. Ferguson. 2011. *Pathways to prosperity: Meeting the challenge of preparing young Americans for the 21st century*. Cambridge, MA: Pathways to Prosperity Project, Harvard University Graduate School of Education.

and opportunities for economic prosperity. The public education system is failing too many young people—both those who remain enrolled as well as those who have been alienated and effectively pushed out (often due to chronic low levels of literacy and numeracy).

Meanwhile we have an economy that is largely failing huge swaths of society: the working-class, the unemployed and underemployed. Manufacturing is still one of the keystones of our economy. Although it employs less people directly than it did 30 years ago, thanks to sophisticated technologies, it has only increased in productivity since World War II. Despite the manufacturing sector's importance to our national economy, despite the need for good paying jobs, the shocking reality is that according to the National Association of Manufacturers, 600,000 jobs remain unfilled in this vitally important sector.<sup>7</sup> This effectively equates to 600,000 lost opportunities. Talent, innovation and economic prosperity, for both individuals and companies, remain undeveloped and disconnected from today's globalized economy. Our inability, as a society, to fill these jobs, this "low-hanging fruit" for addressing unemployment and alleviating poverty, is setting the stage for the US to undermine its own potential for equitable economic development.

All of these conditions converge in communities like Austin, one of the largest neighborhood areas on the West Side of Chicago. Austin is home to approximately 100,000 people, about 85% of which are African-American, 27% of which are living in poverty (compared to 19% averaged across Chicago), 21% of which are unemployed (Compared to 11% averaged across Chicago).<sup>8</sup> There is a crisis in joblessness which includes Austin, particularly for

youth and young adults ages 20-24 which is estimated at 57% and that estimate goes as high as 73% in surrounding areas.<sup>9</sup> The student body at Austin Polytechnical Academy has been a direct reflection of these conditions with a student body that is: 98% low-income, 98% African-American, 2% Latino, 24% with documented learning disabilities, and 14% are considered homeless.<sup>10</sup>

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Manufacturing Connect emerged as a response to these conditions. Manufacturing Connect is a programmatic prototype developed and operated by the not-for-profit organization Manufacturing Renaissance (MR). MR has been working with Chicago Public Schools (CPS) in a school called Austin Polytechnical Academy on the West Side of Chicago since its inception, in 2005 and school opening in 2007. Manufacturing Connect is a result of the policy and advocacy work of the Chicago Manufacturing Renaissance Council (CMRC), which was set into motion with the objective to reconceive and rebuild the link between secondary education and the opportunities in today's advanced manufacturing sector which benefits both young people and manufacturers alike.

## How Did We Get Here?

<sup>7</sup> Morrison, Tom, Emily S. DeRocco, et al. 2011. *Boiling Point? The Skills Gap in U.S. Manufacturing*. Deloitte Development LLC.

<sup>8</sup> "Crime in Chicagoland," *Chicago Tribune*, January 25, 2016.

<http://crime.chicagotribune.com/chicago/community/austin#note-3>

<sup>9</sup> Cordova, Teresa, Mathew D. Wilson, and Jackson C. Morsey. 2016. *Last: The Crisis of Jobless and Out of School Teens and Young Adults In Chicago*. Chicago, IL: Great Cities Institute, University of Illinois at Chicago.

<sup>10</sup> "Austin Polytechnical Academy HS," *Illinois Report Card 2014-2015*. <http://www.illinoisreportcard.com/School.aspx?Schoolid=150162990250840>

The road that led to the creation of Manufacturing Connect began over thirty years ago with the founding of Manufacturing Renaissance (formerly known as the Center for Labor and Community Research and, before, that, the Midwest Center for Labor Research) by my father, Dan Swinney. As a young man, Dan was deeply inspired by the Civil Rights Movement of the 1960s, particularly after an eventful summer as a volunteer for the Student Non-violent Coordinating Committee (SNCC), which included being jailed and beaten for being SNCC sympathizer, that irrevocably altered his world view. As a result, he dedicated his career in the pursuit of economic equity.

Dan became a machinist and also a successful labor organizer, organizing a Steelworkers Union local at Taylor Forge, a subsidiary of Gulf & Western, located on the West Side of Chicago. Taylor Forge, like so many other hundreds of small manufacturing companies around the country, was consumed by conglomerates like Gulf & Western, which siphoned its capital resources to other lines of higher, short-term, profit-generating investments.<sup>11</sup>

Despite this intentional dismantling of the hundreds of family-owned companies that made up the manufacturing sector, Dan found it difficult to organize his members to fight the disinvestments happening department by department at Taylor Forge. Plant closures were

happening frequently at that time. The predominant narrative sold to the public was that workers were needed to cut costs through concessions in their wages and benefits as a way to save their jobs. Dan knew that it wasn't enough to accuse the company of being greedy, he knew he needed a competing business plan of how the company could operate profitably, working in partnership with the union and its

employees. But by that point it was too late to mount such an effort. Dan, like so many thousands of people who lost their jobs from sector wide disinvestments, was laid off from Taylor Forge when the company was closed 1983.

Dan, along with other local

Steelworker Union leaders, organizers and academics founded Manufacturing Renaissance in 1982 to provide the kind of research and analysis that Dan had needed to help save jobs at Taylor Forge as well as provide a resource to others who were working to stabilize their local economies. Through the 1980s, Chicago lost 3,000 of 7,000 manufacturing companies with over 150,000 people who lost their jobs. During that time MR studied hundreds of companies and worked on dozens of campaigns with local unions, community-based organizations, and even the City of Chicago under the Harold Washington administration, to save manufacturing jobs.

One particularly demonstrative case study was MR's effort to help save jobs at the E.J. Brach's Candy Company, the largest candy manufacturer in the world at the time located in the heart of the Austin community. In 1990, the International Brotherhood of Teamsters

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<sup>11</sup> Hamison, Bennett. "Gulf+ Western: A Model of Conglomerate Disinvestment," *Labor Research Review*, Volume 1, No. 1, (1982): 18-23. <http://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1001&context=lr>

(IBT) Local 738 and the Garfield/Austin Interfaith Action Network (GAIN) looked to MR to provide research and strategy assistance to see if there was a way to keep the company from moving thousands of jobs from the Brach plant on Lake Street and Cicero Avenue to Mexico. Brach's foreign parent company was threatening to move production to Mexico and eliminate more than 2,100 jobs. MR's research, which included direct assistance from a former CEO of the company, concluded this move was being catalyzed due to a series of misjudgments by the relatively new parent company, and instead of making the necessary investments to get the company back on track, simply moving the production to Mexico provided a cheaper solution.<sup>12</sup> In short, Brach's owner's desire for short-term profit gains would lead to long-term job and income losses for the workers and their community.

This narrative represents a scenario that replayed thousands of times over in Chicago and the broader United States economy. Fueled by research that Brach's was still a viable company (despite recent crises), MR, IBT and GAIN spearheaded a Save Brach's Coalition which organized about 100 Chicago and West Side community, civic and religious organizations to advocate upon City leadership and Brach's to sell the company to local ownership.<sup>13</sup> Although their efforts delayed the closure of the plant for several years, it was ultimately not enough to save Brach jobs altogether. When the Brach's plant finally closed in 1996 putting thousands of people out of work—it brought a magnifying lens to the critical role that manufacturing has in both local economic development and for the quality of life of the residents of Austin, whether they worked directly in manufacturing or not.

<sup>12</sup> Midwest Center for Labor Research, *E.J. Brach: Misadventures in Candyland*, May 1994.

<sup>13</sup> Midwest Center for Labor Research, *E.J. Brach: Misadventures in Candyland II*, August 1994.

Although there were many more losses than wins during the first 15 years of the organization's work, what it provided was an in-depth and nuanced knowledge of the all the variables involved in what it took to save jobs and create new ones. Dan and MR learned that the loss of all those manufacturing jobs was not some inevitable, "natural" progression of the economy as the emergence of globalization, the modern finance sector and the knowledge-based economy came into fruition. Dan believes that 80% or more of the companies that closed during the 70s and 80s could have been saved if there was enough advance notice that a closure was imminent and a willingness across both public and private stakeholders to proactively engage in a planning process that would allow for balancing public sector priorities, like jobs and stable communities, with a needs of the private sector to earn a fair return on their investments.

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The manufacturing companies that did last through this period of time, did not only survive, they thrived. Although there were fewer companies, they had grown more technologically sophisticated, embraced robotics and other innovations that allowed the sector as a whole increase its productivity in lock step with the US's growing GDP.<sup>14</sup> To this day, unlike any other sector, manufacturing supports middle-

<sup>14</sup> The Manufacturing Institute, *The Facts about Modern Manufacturing*, 8th Edition, 2009.

[http://www.themanufacturinginstitute.org/~media/D45D1F9EE65C45B7BD17A8DB15AC00EC/2009\\_Facts\\_About\\_Modern\\_Manufacturing.pdf](http://www.themanufacturinginstitute.org/~media/D45D1F9EE65C45B7BD17A8DB15AC00EC/2009_Facts_About_Modern_Manufacturing.pdf)

class incomes for people of all educational levels. Manufacturing creates six new jobs in related sectors for every one manufacturing job created. Manufacturing also increases local tax bases—given that most manufacturing companies are domestically- (if not locally-) owned, privately-held, small businesses.<sup>15</sup> What we now call “advanced manufacturing” employed fewer people directly, but the quality of those jobs increased. These advanced manufacturing jobs required more specialized skills and paid higher average compensation than most other industry sectors.<sup>16</sup>

In 2001, MR and the Chicago Federation of Labor published a report funded by the US Department of Labor entitled *Creating a Manufacturing Career Path System in Cook County*. The report detailed the gaps in the workforce development and training system as it related to the manufacturing industry, including: the lack of standards to define and measure quality training, the public school system and community colleges not teaching the skills required by modern manufacturers, and no recruitment mechanism to attract young people into the field.<sup>17</sup> The report also outlined a proposal to address these issues, the ideas of which lead to the creation of the Chicago Manufacturing Renaissance Council (CMRC) in 2005, a multi-sector coalition of government, labor, business, and community leaders committed to making Chicago a global leader in advanced manufacturing.

Given the central role of education, the CMRC engaged the then CEO of Chicago Public Schools, Arne Duncan, who invited the CMRC to submit a proposal as part of his Renaissance 2010 initiative. Thus, the CMRC’s

first major project was the development and design of a school with a high quality program that could create a meaningful link between a high school and well-paying manufacturing jobs. The CMRC convened a school-design team that included educators, the Chicago Teachers Union, manufacturers, community-based organization leaders, and local training and workforce development agency leaders. The resulting school design proposal was for a school to be operated by Chicago Public Schools and represented by the Chicago Teachers Union, called Austin Polytechnical Academy, which opened in 2007.

Austin Polytech’s goal was not just to be another vocational school trying to plug Kid A into Job B. The design for Austin Polytech was inspired by international best practices in both education and community and economic development, where a school can serve as a catalyst for community development instead of simply a portal for the best and brightest to leave the community. For example, in 1943, in the Basque region of Spain, a small engineering high school was founded by a Catholic priest, Don Jose Maria Arizmendiarieta. In the aftermath of the Spanish Civil War, where the small town of Mondragon laid in ruin, Arizmendiarieta believed that if the youth learned skills in engineering and manufacturing (fused with Catholic social values) they could start businesses that could help improve the community through providing gainful employment and create the wealth needed for rebuilding the community infrastructure (such as creating a bank, a university and other services).

Five of the first graduates of this technical high school did start their own manufacturing company, in 1956, making small stoves that soon successfully sold all over Spain. This first company was created as a worker cooperative grounded in community-building values which ensured profits were reinvested back into the business to provide more jobs, foster new businesses, and support the broader community.

<sup>15</sup> The Manufacturing Institute, *The Facts about Modern Manufacturing*, 8th Edition, 2009.

<sup>16</sup> The Manufacturing Institute, *The Facts about Modern Manufacturing*, 8th Edition, 2009.

<sup>17</sup> Chicago Federation of Labor and the Center for Labor and Community Research, *Creating a Manufacturing Career Path System in Cook County*, December 2001.

The result of this visionary effort is the Mondragon Cooperative Corporation—which today is a network of 100 cooperative businesses employing over 85,000 people in Spain and around the world, while still espousing the same values of community-driven economic development.<sup>18</sup>

## Building Austin Polytech From the Ground Up

When MR sponsored a trip to take nine Austin Polytech students to visit Mondragon back in 2009, students observed the lack of visible poverty, the clean streets and the quiet neighborhoods, and were surprised to learn that almost everybody who wanted a job had one. In addition to a typical college prep program that all students would take, the unique elements that distinguished the Austin Polytech design also included:

- Three to four years of the *Project Lead The Way* pre-engineering course sequence;
- One to two years of a machining course MR developed to help students earn up to four nationally-recognized machining credentials from the National Institute for Metalworking Skills (NIMS);
- A variety of manufacturing and engineering career-exposure opportunities, including field trips to local manufacturing companies, trade shows and college campuses;
- Work experiences, including summer jobs and job shadowing at local manufacturing companies;
- A variety of work readiness and leadership development opportunities; and
- Individualized coaching to help interested graduates access career and college opportunities related to manufacturing and engineering.

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first class of ninth graders as one of three new schools housed in the shell of the Austin Community High School—a school that had recently been closed by CPS due to mix of years of disinvestment leading to low performance, high rates of school violence, and other conditions unfortunately associated with “inner city” schools. As one of the lead conveners of the school’s design team and given MR’s 30 years of work on the West Side around a variety of economic development initiatives related to industry retention and workforce development, MR was committed to working closely with the school to help it fulfill its mission to “educate the next generation of leaders in advanced manufacturing.” Our role initially was to help the school create partnerships with local manufacturers who would provide the work experiences for students and support the technical training goals of the program.

However, like so many great ideas on paper, the difficulties of implementation in a complex, dynamic and resource-poor environment quickly materialized. The school and MR’s work to develop this new career program to serve its students had a mix of compelling strengths and undermining weaknesses. On one hand, this small school on the West Side was creating more paid internships for students than any other high school we knew about in the district, and specifically, internships in manufacturing. Austin Polytech was for a couple years the top

<sup>18</sup> Georgia Kelly and Shaula Massena, “Mondragon Worker-Cooperatives Decide How to Ride Out a Downtum,” *Y&A*, June 2009.

high school in the state of Illinois for high school-aged students earning NIMS credentials and one of the top 10 training facilities overall for NIMS training in Illinois. The program MR created had the most robust manufacturing company partner engagement of any equivalent program we were aware of—we worked with an average of nearly 40 manufacturers per school year, working with a total of 90 companies over the years, who hosted and hired students and advised the program in some way or another.

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On the other hand, most students coming into the school as freshmen averaged fourth grade reading and math scores. Funding that allowed the school to have an extended school day with academic, extracurricular and social-emotional supports dried up within the first three years. The school has had five principals in the last eight years while CPS has had six CEOs of schools in the same time frame, with dozens of other administrative positions experiencing similar turnover. With every administrative turn over, the institutional memory needed to protect the program that Austin Polytech represented was eliminated.

Manufacturing, indeed, has a mixed legacy as far as the average American is concerned. Although always credited for creating a middle class in the United States, manufacturing also has an ugly history of relegating dangerous and dirty work to people of color due to pervasive racism. When hundreds of thousands of people lost their jobs in the waves of plant closings in the 1970s and 1980s, the positive effects of manufacturing left town while leaving its negative effects behind: empty factory shells, indus-

trial toxic contamination, and massive urban blight. Thus, understandably so, at a time when manufacturing was presumed irrelevant, MR was at times left isolated.

Critics from the community were wary that the school was reminiscent of the vocational education of yesteryear, targeting African-American youth to serve as the grist for the mills of industry. Critics from the business sector expressed deep concerns over, and cynicism of, the ability of public education (much less inner-city public education) to meet the needs of today's high-tech manufacturing industry. Critics from the educator community, including many who worked in the school, were skeptical and even hostile at the notion of connecting education to work in manufacturing. Promoting anything but college was a diversion and counter to the vision which many educators saw as their job. We had critics from across the spectrum. At times, this felt to us like a case of institutional actors resistant to change and protective of a status quo that provided them with individual job security even while the system was failing young people, communities and manufacturers alike.

That said, MR's role in this project, especially as it evolved over time, was also suspect. From nearly every vantage point, MR was considered the "outsider," not educators, not manufacturers, not parents of children on the West Side, not based within the boundaries of the Austin neighborhood, and no legal authority of any kind as it relates to any aspect of the school's operations. Despite the long term history of working in Austin, the organization itself did not fit neatly in any particular stakeholder box.

However, with an organizer's resolve, through methodical, persistent and often tenacious engagement with stakeholders, MR was able to win over many critics, one person at a time, to understand the implications of what a school like Austin Polytech could mean for the Austin community. We talked about the im-

portance of integrating college and career education; that all students, regardless of academic abilities, would benefit from rigorous college preparatory academics, college tours and contextual learning through hands-on career preparation experiences.<sup>19</sup> We talked about the nationally-recognized industry credentials students could earn while in high school. Individuals who earn National Institute for Metalworking Skills (NIMS) credentials are typically preferentially hired and could start in entry-level, career-track positions earning an average of \$18/hour (when the school started is was approximately \$16/hour).<sup>20</sup>

We talked about the average compensation (including wages and benefits) in the manufacturing industry, which is about \$32/hour

compared to other non-manufacturing industries which average \$29/hour.<sup>21</sup> We explained how manufacturing is no longer toiling assembly line work, cranking out simple products, but explained how the manufacturers of today are designing and producing increasingly sophisticated and precise components that go into the most advanced technologies in the world—from MRI machines to wind turbines.<sup>22</sup> We

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talked about the opportunity for business ownership. MR did a study that surveyed 800 manufacturing companies in Chicago, and of those with an owner 55 and over, 40% were in risk of closing solely because there was no successor.<sup>23</sup> We talked about the Mondragon story as an example of what could be possible for Austin. We talked about how this kind of program could be the first step towards ultimately building an educational infrastructure that could contribute to positioning Austin as a global leader in the development of technologies. In this vision, Austin Polytech would be an inte-

gral part in cultivating the next generation of talent who develops these technologies and starts the businesses to manufacture

them. Austin Polytech could be the springboard for the re-development of the community guided by the skills and values of this generation of students—development that will be economically, socially, and environmentally sustainable and restorative.

Of course, it wasn't just all talk. We made sure students and teachers alike got introduced to modern manufacturing first hand. For example, some of the earliest fieldtrips we organized was to Winzeler Gear, a small factory on the Northwest Side of Chicago, a facility full of sunlight and highly sophisticated machinery—complete with art on the walls and highly engaged employees. On one such visit, there we were, standing on a lacquered floor in a glass-walled conference room overlooking the plant

<sup>19</sup> Symonds, William C., Robert Schwartz, and Ronald F. Ferguson. 2011. *Pathways to prosperity: Meeting the challenge of preparing young Americans for the 21st century*. Cambridge, MA: Pathways to Prosperity Project, Harvard University Graduate School of Education.

<sup>20</sup> “Computer Numerically Controlled (CNC) Operator and Programmer in Chicago, Illinois Salary,” *Payscale*. 2016. [http://www.payscale.com/research/US/Job=Computer\\_Numerically\\_Controlled\\_\(CNC\)\\_Operator\\_and\\_Programmer/Hourly\\_Rate/71fbc50b/Chicago-IL](http://www.payscale.com/research/US/Job=Computer_Numerically_Controlled_(CNC)_Operator_and_Programmer/Hourly_Rate/71fbc50b/Chicago-IL)

<sup>21</sup> The Manufacturing Institute, *The Facts about Modern Manufacturing*, 8th Edition 2009.

<sup>22</sup> The Manufacturing Institute, *The Facts about Modern Manufacturing*, 8th Edition 2009.

<sup>23</sup> Center for Labor and Community Research. “Interviewing with Aging Owners to Save Industrial Jobs,” *A Report to the Economic Development Commission Foundation of Chicago*. August 1989.

floor with humming, automated million-dollar machines. As Mr. Winzeler addressed the students, he pointed to several engineers on his staff whose Masters degrees he had paid for. He explained how his most significant challenge in running his business is finding employees who not only have the specialized skills he needs, but who also have the drive to continue their education and capacity to become innovators within his company and in the field where the company competes. Winzeler Gear, and other manufacturers like them, no longer run on people power, they run on innovation. Innovation is what keeps them competitive and profitable in today's globalized economy.<sup>24</sup>

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Although Mr. Winzeler is personally a generous man, he makes the time to meet with our students to explain these facts of his business not out of charity but in the self-interest and preservation of the future of his company—a company that is dependent on young people, like those freshmen, becoming inspired to play a leadership role in the advanced manufacturing economy. If I took a picture of this scene of Mr. Winzeler talking to a group of African-American high school students, on one side we have representatives of what could be considered a disenfranchised community, with an unemployment rate of over 21% and a poverty

rate of 27%, where the average incoming ninth grader reads at the fourth grade level, and one of the highest rates of violent crimes in Chicago.<sup>25, 26</sup> On the other side, we have a representative of small manufacturing companies (manufacturers with fewer than 100 employees make up 94% of all manufacturers in the United States, most of which are as productive and profitable as they have ever been, succeeding and even expanding despite the recent recession.<sup>27</sup> However as described by Mr. Winzeler, one of the most significant challenges these companies face is the lack of skilled employees.<sup>28</sup>

Between 2007 and 2011, the school added one grade level at a time until the first graduating class in 2011. Although the original school design was never fully implemented due to budget constraints and varying degrees of participation (and even obstruction) from various CPS administrators, MR staff was still able to successfully implement a career program through collaboration with a mix of manufacturers and teachers and through engaging students and their parents directly.

MR raised over \$150,000 towards the installation of a modern machining facility in the school in 2009. MR also hired a machining instructor to teach the curriculum to help students earn NIMS credentials once they became juniors and seniors in high school. MR staff coordinated over a hundred fieldtrips to visit local companies and coordinated job shadows, internships and summer jobs through dozens of local companies. The program activities MR

<sup>25</sup> “Crime in Chicagoland,” Chicago Tribune, January 25, 2016.

<sup>26</sup> Data results from Reading Scantron Test administered by Chicago Public Schools to Austin Polytech 9th graders, October 2010.

<sup>27</sup> National Association of Manufacturers. “Facts About Manufacturing,” November 2012.

<http://www.themanufacturinginstitute.org/Research/Facts-About-Manufactur->

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<sup>28</sup> National Association of Manufacturers. “Facts About Manufacturing,” November 2012.

<sup>24</sup> The Manufacturing Institute, *The Facts about Modern Manufacturing*, 8<sup>th</sup> Edition 2009.

operated essentially became a drop-in, extracurricular program for those students who were interested in participating. Although nearly all students took the engineering and machining courses, not all were interested or able to apply themselves to the extent of earning credentials or participating in the work experiences. Many students simply chose not to participate. Students chose to attend Austin Polytech for a variety of reasons and being passionate about starting a career path in manufacturing was rarely at the top of the list. Some students participated in a couple of the career preparation activities we organized and some participated in everything we had to offer—whether they were fundamentally interested in manufacturing or not—as there were few other extracurricular options available at the school.

### The School's First Fruits

For those first four years, we operated a program in a situation in which nearly all the students and teachers we worked with had no frame of reference for understanding what a career in modern manufacturing actually entailed. We were, it felt like at certain times, starting from scratch: building a new, culturally acceptable path to success. This was a challenge when there were very few young people who worked in manufacturing, much less aspired to work in manufacturing. There was no current precedent to reference, no one with whom our kids could identify and say, “I want to do what he or she did.” Until we had our first graduates actually secure jobs and have the experience of earning a steady pay check, the fruits that kind of economic security can bring were not always apparent to our students. Despite all of our efforts, when the Austin Polytech had its first graduating class in 2011, only one graduate chose to work manufacturing even though only about 50% of the graduates made it to college that first year after high school.

It was not until the Class of 2012 that we had our first critical mass of graduates choose to pursue a career-track job in manufacturing

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upon graduation. Several graduates enrolled in college with the intention of studying engineering and a group of about 10 graduates started entry-level jobs at a handful of different companies. It was through their experiences that we got our first real feedback as to the efficacy of our efforts. Some were able to hit the ground running at their new jobs, while some got washed out within the first few weeks as they learned the hard way that expectations for success at the work place can be profoundly different than expectations for success in high school. As we studied the experiences of the 2012-2014 graduates we found that, though our technical training seemed to be sound, where our graduates struggled most was in the professionalism or “soft-skills” training. It was proving insufficient to focus primarily on the resume and interview skills.

Because our students often had a NIMS credential (or two) as well as some work experience, getting the job was the easiest part—it was keeping the job that was the hard part, as it involved transitioning into a whole new culture different from the one they grew up in. Most companies in our area have few African-American employees and most manufacturers have a workforce with an average age in the late 40s and 50s. Our 18- and 19-year-old African American graduates were walking into companies with virtually no support in place, where it's often a “sink or swim” kind of environment, complete with a variety of workplace rules and expectations that can appear hidden without someone being intentional about show-

ing a new and inexperienced hire the ropes. This required both cross-racial and cross-generational support of the type our society is not particularly good at fostering.

For example, we had one young man get terminated because he wasn't doing enough overtime. It wasn't until talking both to the employer and the young man that we learned that the young man didn't know that overtime was mandatory. He would leave at the end of his shift, not understanding that leaving when there was

mandatory overtime facilitated the appearance that he was not reliable and dedicated to his job. We have also learned of circumstances when our graduates dealt with tensions on the job in part due to they had more technical training (through earning NIMS credentials) than their much older supervisors. All of these are circumstances that a more experienced person would, perhaps, know how to better navigate.

## Improving the Model for the Future

Our 18- and 19-year-old African American graduates were walking into companies with virtually no support in place, where it's often a "sink or swim" kind of environment, complete with a variety of workplace rules and expectations that can appear hidden without someone being intentional about showing a new and inexperienced hire the ropes. It was during this same period of time that Austin Polytech and the two other schools in the Austin Multiplex building were beginning to undergo a process of consolidation. All three schools had struggled with persistent under-enrollment, due to a

mix of declining populations in the surrounding community, an expansion of new charter schools that were competing for the same shrinking population of students, and the fact that the three schools could not get away from the old legacy of Austin High School as a dangerous place to go to school. Each school also

struggled with low academic performance as measured by standardized tests. It was therefore time to shift our attention toward building a program instead of

building a school—one that was now in active risk of closing.

In early 2014, we had the opportunity to apply for a US Department of Labor grant called the Youth CareerConnect program that was seeking to identify and scale up promising practices in career pathways programs on the secondary level that were successful in connecting young people to college and careers upon graduation in STEM-related fields. It was the opportunity for the programmatic work we now started calling Manufacturing Connect to build on its strengths and evolve a model for how high schools can create meaningful and robust linkages between the young people they serve and real economic opportunity in the surrounding region. We submitted our program design and were deeply honored to be one of 24 grantees out of over 400 applicants nationally for a four-and-a-half-year grant to implement this "new and improved" program design. Of the 24 grantees, we are one of two lead agencies who are not school districts, and the only entity in the state of Illinois to receive the award.

Thus the goal for MR's work officially shifted—from building up a school to supporting youth through schools. Manufacturing

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Connect now provided a template and framework for a program around our experiences working through Austin Polytech. Although we would be committed to work with the newly-consolidated Austin High School (which we now know will be named Austin College and Career Preparatory High School starting in the Fall of 2016), we knew there were key elements that could be replicated elsewhere if need be. Manufacturing Connect not only was about the technical training and work experiences, but through learning from our former participants, we also needed to expand the social supports of our program—to go much deeper and tailor our professionalism training to the unique situations our young people would find themselves in.

***Thus the goal for MR’s work officially shifted—from building up a school to supporting youth through schools.***

Manufacturing Connect’s design shifted from a drop-in program into a prescribed program in which students who choose the engineering and machining course sequence would apply to participate and commit to participating for a minimum of two years. MC’s aims is to help all participants have a college acceptance letter in one hand and a job offer letter in the other upon high school graduation. This means every participant knows and has considered their options—either to go to college or into a career-path job or both simultaneously. In MC’s experience, even the highest performing student may not have the means, interest or wherewithal to successfully stay in college full-time right after high school. Even many of the lower performing students can access an opportunity for career-path employment at a company who may help pay to continue their education and training.

Every young person should know their options in light of their education, skills, interests and work experiences. At the heart of the Man-

ufacturing Connect, shaped from both direct experience and the best international models, are a few basic principles and values that guide the priorities and operations of the program:

- 1) Focus on Advanced Manufacturing for both public and private benefit
- 2) Partner with public education
- 3) Work through public-private partnerships
- 4) Regional labor market conditions drive program design and development
- 5) Schools as part of community development
- 6) Social inclusion, equity and opportunity

These are values that we believe will reinvent our communities, our economies and our schools—all with a focus on justice and inclusion.

Manufacturing Connect consists of ten elements that represent the full expression of the program. Depending on the hosting school and community, the partners available, the resources and staffing available, each of these elements can be designed and developed to varying degrees that should be determined during a feasibility study and developmental planning stages. Certain elements can be phased in over time, whereas others should be in place from day one of program implementation:

- 1) Three- or four-year course sequence and industry credentials
- 2) Multiple work-based learning experiences
- 3) Work-readiness skill development
- 4) Individualized counseling, coaching and mentoring
- 5) Contextualized educational experiences
- 6) Exposure to post-secondary opportunities
- 7) Leadership and entrepreneurial development
- 8) Career-track jobs and career navigation support
- 9) Manufacturing company participation

- 10) Human Resource development support for local manufacturers

Under MC's revised design framework, our first graduating class of 28 seniors will graduate this June of 2016. Our goal is that at least 80% of our students will be enrolled in college and/or working full-time in a career-track job within the first six months. Meanwhile we are actively attempting to keep track of the graduates from our program from the last five years. Of the 328 graduates from Austin Polytech between 2011 and 2015, approximately 157 of those students participated in our program activities, earning at least one of 280 NIMS credentials and participating in one or more of 248 paid internships and summer jobs in manufacturing. As might be expected, we've had difficulty keeping in touch with all the graduates, but we've assisted 38 graduates through 50 manufacturing job placements (approximately a third had 2-3 placements before finding the right fit), averaging about a one-year retention on the job earning between \$25,000 and \$75,000 (estimates based on self-reports).

Where we once had virtually no young people in Austin working in manufacturing, much less aspiring to work in manufacturing, we now have about twenty who are successfully pioneering this new pathway and are serving as role models for the high schoolers coming up behind them. We now have some great stories to tell our participants and our alumni make the best guest speakers on Career Day.

We have one alum, "Rico," who is now earning around \$75,000 a year as a twenty-one-year-old. What impressed our participants the most is that he owns two cars. Another young man, "Dante," who has been working at his company for over three years now, just bought a house in the community where he lives with his partner and their baby daughter. Other alumni who have been on the job for a while now are also continuing their education, taking advantage of the tuition reimbursement pro-

grams that their employers offer. Although it's not many, we now have our first program graduates leaving college with their degrees.

It's not a cakewalk, by any means. For each success story, each of these young people also have challenges they face, whether personal or professional. Some of them learned their lessons the hard way, losing their first job only to pick up and find success in the second job, or even the third. The good news is that many of these young people are persisting as they realize that they truly have a valuable skillset relative to many of their peers. We've had alumni who, barely giving us the time of day while attending Austin Polytech, come back to us two years later and ask if that NIMS credential they earned is still good, or if we could help them get the kind of job "Rico" has. We simply answer: "Yes!"

***MC's aims is to help all participants have a college acceptance letter in one hand and a job offer letter in the other upon high school graduation.***

As part of MR's continuous learning on how to best serve the young people who have gone through our program, in the last year we've started organizing a network of our working alumni called the Young Manufacturers Association. Our goal is the help create a network of these young people who are in the process of building their careers in manufacturing to provide, first and foremost, a space where they can provide peer support to one another, and secondly, to continue providing career coaching and leadership development support as they navigate the next steps of their careers, and finally, to proactively serve as role models to other young people who many not be aware of the opportunities in manufacturing.

The Young Manufacturers Association just had a meeting last weekend. Andre showed up. He shared the struggles he was dealing with on

the job. He is not getting along well with his supervisor, but admitted he knows he was slacking a bit on getting to work on time and that it was not the best way to express his frustration. His fellow classmates at the YMA meeting, Jaden, Shante and Trevor, nodded in appreciation of his story and shared their own stories of how they dealt with similar challenges on the job. Sometimes it just feels good to get things off your chest. By the end of the meeting, Andre had a couple ideas he got from his peers on how to better manage the situation at work and promised to let us know how it all goes next time.

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