

INDUSTRY & INCLUSION

MANUFACTURING

WORKFORCE

STRATEGIES

BUILDING AN

INCLUSIVE FUTURE

How community-embedded
workforce organizations center
racial equity, credentialing,
and training to create stronger
neighborhoods

June 2021





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INTRODUCTION

Overview

In 2020, The Century Foundation (TCF) and the Urban Manufacturing Alliance (UMA) collaborated to create a national program to examine educational strategies and community-driven workforce models that connect diverse communities to opportunities in manufacturing, and to identify the policy change needed to scale those efforts. The Inclusion and Industry 4.0 (I&I) Project brought together leading practitioner organizations to understand and lift up best practices and challenges, and extract lessons for policymakers to expand support for community-based manufacturing training. I&I represents a critical component of TCF and UMA's goal to promote the development of effective workforce and education strategies targeting an inclusive future in manufacturing.

The I&I program builds on an earlier collaboration starting in 2017 when UMA joined TCF on their [High Wage America campaign](#), which published nine policy research reports and held conversations with hundreds of stakeholders across the industrial Midwest. The initiative, one of a new generation of high impact TCF policy research efforts to address inequality, attracted multiple 2020 presidential contenders (Senators Sherrod Brown and Kirsten Gillibrand, and now-President Joe Biden) to its events, and national media attention for its recommendations. High Wage America research concluded that tackling inclusion, alongside a move to more advanced production, would determine the fate of American manufacturing.

Manufacturing has one of the most aged workforces in the economy and currently faces a recruitment and skill-building challenge. These come on top of the fourth industrial revolution as manufacturers are redesigning production and products to take advantage of automation, artificial intelligence, and the internet

of things — demanding new skills at every level of production. To address these challenges, manufacturing companies and workforce development partners are developing new approaches to adult skill development that takes into account barriers to accessing, committing to, and completing long-term training programs. These same organizations are also going through their own learning and growing in order to better support Generation Z talent — individuals born between 1997 and 2012 — who as students experienced drastic economic, cultural, and technological shifts which have impacted K-12 learning, personal values, and ideas about meaningful, sustainable work.

Luckily, an exciting generation of workforce intermediaries is providing diverse workers new opportunities to attain skills in advanced manufacturing. These intermediaries served as our I&I cohort members, and focus on serving adults and adolescents, primarily those of color. Despite the loss of manufacturing in all of our cohort cities, these communities have long counted on the many remaining manufacturing jobs as a source



of middle-class income, especially for those workers who don't have a college degree. But a generation of

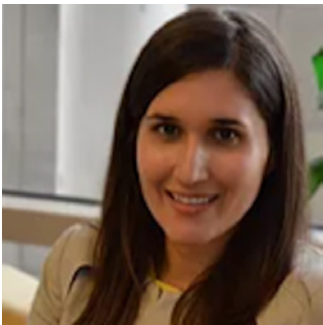
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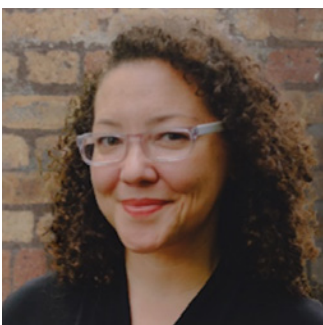
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parents who experienced job loss from that industrial decline — particularly in urban communities of color — have served as a cautionary tale for current youth and young adults. As a result, many younger workers and their families today do not view manufacturing jobs as a viable pathway, and thus have not encouraged them to develop the skills needed to enter and advance in manufacturing careers. However, the rebound in manufacturing over the past eight years, means that good-paying jobs in manufacturing could once again make a big difference for urban communities of color, and others who need well-paying work — but only if comprehensive programs are in place to make the connections between communities, training programs, and these good jobs.

The innovative leaders of the eight I&I cohort members prove that with the right program models in place, a variety of un- and under-employed adults of all ages are able obtain the necessary skills to gain employment into a rewarding career in manufacturing, with further opportunities for skills advancement and wage progression. Through 2020, cohort members, TCF, and UMA worked collaboratively through virtual roundtable discussions, seminars, and interviews to explore policies and programs, questions of scale and sustainability, and promising practices. From this work many takeaway

lessons about education, training models, employer engagement, and supportive service strategies were organized, documented, and shared.¹ Moreover, this collective research will position these organizations as national leaders who can spark replication in other communities, and provide policymakers with a road map of how to make such replication and expansion possible.

How to use the research

TCF and UMA have packaged lessons learned from the Industry and Inclusion 4.0 Project into two publications: *Industry & Inclusion: Manufacturing workforce strategies building an inclusive future*, and *Industry & Inclusion: A Blueprint for Action*, this research report and blueprint for action. This report is a journalistic set of profiles of our cohort organizations and the people who power them. *Industry & Inclusion: A Blueprint for Action* is a set of conclusions and insights based on the common themes of: Learning, Racial Equity, Economic Justice, Pathways to Ownership, Relational Innovations, and Creating Strong Partnerships. These publications highlight barriers and opportunities at the intersection of workforce and economic development, place a spotlight on leading members of the cohort, document learnings from the cohort's interactions, and organize research and public policy recommendations.

The scaling of successful workforce programs like those highlighted in these publications will be aided by complementary public policies. TCF, UMA, and the I&I cohort are promoting a greater priority on inclusion throughout federal manufacturing programs, such as Manufacturing USA and the Manufacturing Extension Partnership, and national workforce development programs, such as the Workforce Innovation and Opportunity Act (WIOA). TCF's *Industry & Inclusion: A Blueprint for Action* includes an analysis of ways in which federal workforce and higher education policies can be reformed to facilitate the scaling of I&I cohort members and similar program models. In addition,



¹ See Appendices.

Industry & Inclusion: A Blueprint for Action includes state and regional action areas, including how to invest federal and state dollars and how to structure higher education involvement in non-degree credential programs in manufacturing.

This report includes a summary of the interactions and discussions between cohort members, UMA, and TCF; reflections on connections within those discussions; and a collection of technical descriptions and personal profiles that share the stories and backgrounds of program leaders and stakeholders with whom they work. *Industry & Inclusion: Manufacturing workforce strategies building an inclusive future* will help similar workforce development organizations gain insights to improve upon existing practices and provide guidance and connections to help make the leap to new beneficial practices. Together, *Industry & Inclusion: Manufacturing workforce strategies building an inclusive future* and *Industry & Inclusion: A Blueprint for Action* are meant to be used by many different stakeholders who are advocating for new, continued, or expanded support for community-embedded, innovative workforce development organizations that are training current and future manufacturing talent.



SUMMARY OF METHODOLOGY

The goal of the I&I program was to create an opportunity for program leaders to tell the story of their work from their perspective, create a space to discuss what is and isn't working in current strategies, and identify challenges and discuss solutions to increase impact. To achieve this, TCF and UMA organized a new cohort of urban, community-based organizations that have built workforce development programs to help create new education and career pathways for women, communities of color, people with conviction histories, veterans, and other marginalized communities. TCF and UMA's original research plan for the cohort included in-person discussions, facility visits, and national gatherings. Due to the COVID-19 pandemic all activities shifted to virtual gatherings and discussions. The pandemic provided an unexpected backdrop that amplified the importance of the project. Yet, the economic shutdown due to social distancing guidelines, combined with a spike in demand for personal protection equipment and the shutdown of global supply chains, increased awareness of the importance of local factories as places where both essential products are made and where frontline workers work. Also during the I&I cohort, police officers in three different cities murdered George Floyd, Breonna Taylor, and Rayshard Brooks — three Black people, three among far too many before and after them — further amplifying the importance of taking action to include racial equity and inclusion in economic development and workforce strategies. While it is hard to fully grasp how collective learning may have been impacted by these historic moments, it is important to acknowledge they created an immediate shared learning experience that brought participants together in unanticipated ways.

How the project was done

TCF and UMA reorganized our original learning program into all online interactions between cohort members, project conveners, an advisory board, and other



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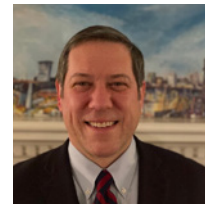
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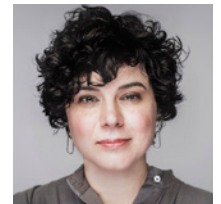
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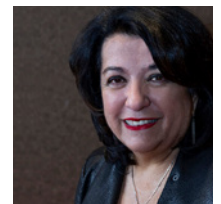
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national experts. The research team used contemporary approaches to knowledge transfer to identify the impactful ways these eight models have been able to seed and scale programs in their own communities while strengthening local manufacturing ecosystems.

The research methods implemented over the course of the 12-month program include: roundtable discussions between all cohort organization stakeholders (industry leaders, trainees, education partners); webinars featuring cohort members, advisors, and subject matter experts; and one-on-one interviews with program leaders and stakeholders from their region. Qualitative analysis was done of these discussions to connect themes across conversations, cities, and programs. Through analysis of the findings, we extracted lessons from the field and identified barriers to success. We designed research questions in each of the structured discussions to capture the strategy behind how cohort members work



with communities and businesses to create career pathways for workers, particularly in communities of color and low-income populations, who currently are not well-connected to the manufacturing sector.

Within the larger conversation about workforce development and ecosystem engagement, we asked questions dedicated to more focused elements, such as the effects of different credentialing models — such as apprenticeships, higher education programs, or competency-based credentials — and relationships with educational institutions on program design and outcomes. We included other questions to better understand the continuing impact of Industry 4.0 technologies, such as automation, cybersecurity, and the internet of things, on the requirements in the manufacturing workforce, and how these are changing the skills required for manufacturing jobs. Within each discussion we intentionally left time and space open to allow more organic sharing and reflection.

While we based observations on qualitative research, we made conclusions in the context of the data these programs provided on job placement, wages, and credential attainment. TCF and UMA developed a standard data request for each organization participating in the cohort to organize data on demographics of participants, data on training completion and credential attainment, and job placement and retention, among other topics like funding sources and key partnerships. .

To help guide and ground the research, TCF and UMA organized an advisory board to provide a deeper knowledge of workforce development models. Our advisory board was made up of national workforce development thought leaders from academia, the private sector, nonprofits, and government. The advisory board provided a much-needed national framework to the local conversations with the eight cohort members.

REFLECTIONS

Given that each cohort organization participated in a three-hour roundtable group discussion, a series of one-on-one interviews, and monthly gatherings, it is impossible to fully share all the stories and moments of learning that informed TCF and UMA's insights and reflections. This process yielded shared experiences and pain-points across multiple organizations, despite working in different cities, with different stakeholders, and within different regional histories.

Many discrete discussions ran through the collection of stories and backgrounds of the cohort members. Individual organizations talked about the process and difficulty of finding skilled trainers to provide technical instruction who also have the social awareness to work with BIPOC communities, individuals who have little to no work experience, and those who live in neighborhoods that have experienced high amounts of trauma.

Each cohort organization approaches this process in their own way. Some have been able to successfully recruit diverse teachers from industry to work full time within their companies, such as Jane Addams Resource Corporation (JARC). Other organizations have built relationships with education partners that have developed train-the-trainer style programs to help teachers better understand their students' experiences, which is a strategy Northland Workforce Training Center (NWTTC) and Manufacturing Renaissance (MR) have created. Finding capable teachers echoes part of another ongoing conversation: it is important to find the right people for the right position. This goes for many different roles within the education-to-career pathway support network: roles which include technical trainers, mentors, career coaches, employer recruitment and support, program marketing, and program advocates. These conversations also touch on the idea that the whole ecosystem needs to fill these roles rather than one individual organization having all of them under one roof.



Having many partnerships within a regional ecosystem — that contribute to the well-being and support of current and future employees *and* manufacturing businesses — was talked about by all cohort members. There is no one way to build these relationships, nor is there just one perfect combination of partners. For example, Lightweight Innovations For Tomorrow (LIFT) and Manufacturing x Digital (MxD) have built connections to technology developers through their non-workforce development work as Manufacturing USA Institutes. They have been able to turn those connections into partnerships which have opened new possibilities for teaching high school students about cutting-edge technologies. Many organizations discussed working on ways to strengthen their regional connections to the education and workforce development networks. Even though both networks are on the education continuum, they tend to operate very differently, leading cohort members to develop separate ways to build partnerships with individual groups.

The most consistent relationships that all organizations have are with networks of manufacturers and of social service providers. Yet again, there are unique ways

to manage these network relationships. Some have created fee-for-service incumbent training programs to bring manufacturers to the table — for example, JARC and Wisconsin Regional Training Partnership / Building Industry Group & Skilled Trades Employment Program (WRTP | BIG STEP) — and others rely on placing newly skilled workers in manufacturing businesses to build interest for ongoing programs, as is the case with MR. Creating relationships with social service providers often depends on building trust with individuals at each organization and providing education and insights about why the communities they serve should be pursuing careers in manufacturing.

Investing in relationships with social services, employers, and the larger ecosystem illustrates another key point: organizations often have to do a lot of work beyond skills training. One instance includes coaching employers to learn new practices and implement policies that correct for discrimination against BIPOC and women, one of the most often cited extra tasks. Some of this coaching is done one-on-one, in subtle ways, like Manufacturing Advocacy and Growth Network's (MAGNET) intern coach who helps employers understand and communicate expectations with their trainees. Whereas Menomonee Valley Partners (MVP) works with external partners to develop race and gender equity training programs for employers. JARC is launching a group discussion forum for many business leaders to come together to discuss race, equity, and inclusion barriers and strategies for change. This work outside of training illustrates gaps within the ecosystem. Many organizations have developed an informal process of taking on extra work, uncovering why it is needed, then finding new organizations to bring into the ecosystem to fill the gap. When this is not possible the next step is often to communicate the importance of doing the “new work” and then seek funding to cover the costs associated with it.

The day-to-day operations, program offerings, and service networks of each organization illustrate the effort it takes for a trainee to transition from no employment, or underemployment, to full time employment. Sometimes the effort is about planning new strategies

for childcare, overcoming family and peer pressure, or covering rent and transportation costs. In other cases the effort is fighting against racist and inequitable employer practices. Each cohort leader shared, in their own way, their empathy and awareness of what it takes to commit to, what for many, is a very new and life-changing experience of learning skills needed to work in manufacturing. This awareness translates into many different strategies, all of which help make this big transition easier. As mentioned previously, all organizations have built social service networks in part to help with easing this major life transition and reducing the effort needed to solve problems associated with creating new childcare options, transportation, and even clothing. Organizations have implemented strategies internally as well. MR and MAGNET, for example, have created mentor programs to connect a trainee with someone who has shared life experiences to help guide them through the process and acknowledge their effort. NWTC and JARC offer career coaching to help individuals ease the transition into employment, preparing them before they start their career for how to navigate on-the-job conflicts and how to advocate for themselves. And, MVP created a women in manufacturing program to connect young women to professionals in careers in manufacturing to help build bridges that previous generations did not benefit from.

The following Profile Library section provides more information on these individual organizations for further study and to help uncover more connections and relationships across the I&I cohort members. *Industry & Inclusion: Manufacturing workforce strategies building an inclusive future* provides both deeper explanations as to how these themes were discussed and provides recommendations to change policies in response.

MAGNET PROFILE

Introduction

As part of the Industry & Inclusion 4.0 Project, UMA interviewed cohort members and their partners to gather background information and details about how they create and deliver programs. From these discussions UMA generated Organizational Profiles for each of the eight cohort members. These Organizational Profiles are divided into two parts:

Technical Descriptions: snapshots of each workforce development organization which include a brief description of their history, an overview of how their signature programs operate, self-identified keys to success, recent outcomes, and their future plans for scaling the impact of their programs.

Personal Profiles: stakeholder interviews to gain a deeper understanding of the relationships that exist between the workforce development organization and the communities and employers they serve. These include trainees, industry employers, and partners in education.

Each Organizational Profile is meant to shed light on how each cohort member successfully navigated the process of designing and implementing an innovative workforce development solution for their region and for people they support. As a collection, these eight Organizational Profiles highlight the importance of: building partnerships and ecosystems, navigating stakeholder engagement, remaining open to ongoing improvements and learning, and understanding both employers' needs and the needs of the current and future workforce.

In the Personal Profiles you will find individual meaningful experiences of: how people's lives were changed by the training programs, how after graduating trainees return to give back to the next generation, and mentorships

between intergenerational workers that share a culture and background. And like the Technical Descriptions, the collection of Personal Profiles highlight important themes. For example, the need for: committing to ongoing dialogue with the community to understand their needs, cultural awareness within manufacturing companies, and a broader definition and understanding of impact and outcomes.

The Organizational Profiles provide a glimpse into the inherent complexity of preparing a new workforce for an ever-changing industry. What UMA found compelling through these discussions is that each cohort member has become an expert in discrete topics like recruiting the right people, building an ecosystem, and supporting the transition of workers. Even though no two organizations operate in the same way, they have all come to understand key important principles: leverage what makes one's region unique; bring partners of all kinds to the table to develop ideas and get feedback; create a culture of learning and education as a lifelong process, within their own organizations and within the manufacturing businesses they work with; and new programs require social innovation — a change in behavior — on the part of trainers, trainees, employers, and funders.

Please visit urbanmfg.org/project/industry-and-inclusion-national-cohort to read our research, commentary, and the seven other cohort member profiles.

MANUFACTURING ADVOCACY AND GROWTH NETWORK [MAGNET]

Revitalizing STEM education, growing our manufacturing companies,
and strengthening our communities.

Cleveland, Ohio

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Brief Introduction, History, & Background

In 2017, The Manufacturing Advocacy and Growth Network (MAGNET) launched a new workforce development program: Early College, Early Career (ECEC). ECEC adapts European-style manufacturing apprenticeships to Ohio schools, providing 9th and 10th graders exposure to careers and opportunities in manufacturing and 11th and 12th graders opportunities to take college classes, to earn manufacturing certifications, to work in paid internships, and to get professional development and soft skills training. ECEC fits under one of MAGNET's three main tracks of programming: Growth Services, Workforce Development, and Start Up Services. MAGNET is a nonprofit consulting group who, for over 30 years, has helped Northeast Ohio manufacturers grow their businesses through hands-on consulting, engineering assistance, and worker training programs. MAGNET collaborates with manufacturing CEOs, governments, community leaders, and educators to solve problems and build opportunities. MAGNET is part of the National Institute of Standards and Technology (NIST) and Ohio Manufacturing Extension Partnership (MEP) program, which supports small- and medium-sized manufacturers across the U.S..

The development of ECEC started in 2015. Eight companies, many of which have an executive presence on MAGNET's board, put together research on ways to grow manufacturing in the region, create a workforce, help manufacturers recruit and retain employees, and establish a long-term solution to close the skills gap. The other component of the research was how to focus on youth, especially those still in high school. The research pointed toward the opportunity that lies in youth apprenticeships and early exposure to manufacturing. This decision was highly influenced by the board chair from Germany who had extensive experience with the industry apprenticeship programs. The board took the

“Early College Early Career (ECEC) really speaks to our belief that no one should have to choose between college or a career. We wanted to create a program that provided various pathways for high school students to access a viable career in manufacturing. ECEC was designed to prepare those that choose college, and those that choose to enter the workforce after graduation. Our program, very intentionally, has different components available to students that support the advancement of either decision.”

-Autumn Russell, Vice President, Diversity and Inclusion, Early College, Early Career

research's recommendations and made them a priority. After two years of planning, MAGNET launched ECEC with eight host companies.

About Early College, Early Career

ECEC is an employer-led initiative with ten companies — including Swagelok, Lincoln Electric, Nordson Corporation, and Parker Hannifin — as the initial core. ECEC combines many different elements to create a comprehensive career pathway. These elements are built around the goals of heightening the awareness of manufacturing careers not only to high school students, but also parents and educators.

Students, starting in the 9th grade, are introduced to careers and opportunities in manufacturing. MAGNET works with members of the initiative to offer plant tours, provide guest speakers representing diverse and under-represented populations, and create engaging online videos to introduce students to rewarding careers in manufacturing. In many cases, the same activities used to introduce students to manufacturing careers are attended by teachers and parents. To increase awareness about manufacturing in general and share different career pathways, MAGNET goes to participating high schools and presents the ECEC program to 10th grade students. They explain the ECEC application process, and drill down into what the program offers



The employers also treat the internship as a stepping stone into future employment. Companies see the two-year commitment as an investment and a test run with a potential employee.

MAGNET's staff — led by Autumn Russell, Vice President, Diversity and Inclusion, Early College, Early Career, and Brittany Becker, Program Manager of Early College, Early Career — are responsible for building relationships across the manufacturing ecosystem. They search for employers that offer internships and plant tours, and can be guest speakers and mentors; they engage with high schools to

and the commitment level that is required. Through a combination of self-selection, teacher recommendations, parent engagement, and employer interviews, students join the ECEC cohort. If a school administrator or teacher thinks the student is a good fit for the program, they provide a recommendation.

Students in the ECEC program are starting their career pathway while still in high school. During their 11th and 12th grades, students have the opportunity to earn up to 15 college credits taking courses that map to an associate degree in Advanced Manufacturing Technology through community college partnerships. Twelfth grade students in the ECEC cohort spend up to 12 hours per week working in paid internships. Students work full-time in the summer between junior and senior year.

They also have the opportunity to earn industry credentials through training and course work. Any college classes are paid for through Ohio's College Credit Plus (CCP) program. Even further, ECEC employers offer tuition reimbursement to employees to promote ongoing education, and students are eligible for this benefit once hired. By covering the cost of college, employers remove the debt burden that often stops students from committing to higher education.

participate in the ECEC program; and they collaborate with community colleges and training centers who offer courses needed to work towards credentials and certificates.

The relationship building work requires many different types of engagement. For example, when working with high schools, some connections start with school district-level administrators who approach MAGNET. In other cases an individual school principal or career pathway coordinator learns about MAGNET and invites them to share information. Depending on who in the school is championing the idea, there may be a need to educate administrators, principals, and teachers about the value of the program and the motivation behind ECEC.

To navigate relationships with employers and students, MAGNET created the Internship Coach and Mentorship roles. The Internship Coach works with both the student intern, making sure they are prepared with soft and technical skills, and the employer, acting as a liaison between the intern, the company, and MAGNET. They have regular weekly conversations directly with the intern's supervisors about any immediate concerns, and Russell leads monthly conversations at a higher level

to find out how the partnership is progressing. This communication is vital to help manage expectations of everyone involved and to increase the likelihood of long-term success for everyone.

If issues arise in the workplace that may come from culture clashes between the employer and students, then MAGNET can coach the student and make recommendations to the company to address the issue. If issues arise outside of the workplace that are impacting a student's ability to commit to the work, the Mentor gets more involved. Mentors are full-time MAGNET staff responsible for tracking student engagement and academic performance, developing relationships, identifying barriers that students may have, and linking students to resources to address any barriers. The Internship Coaches and Mentors make sure students have what they need in order to be successful through the program.

MAGNET has also filled in other roles and responsibilities as the program has had early success and uncovered issues. For example, MAGNET provides transportation, taking students to work or community college, and their Education Coordinator organizes additional training. MAGNET has also developed links to the support networks in and around the high schools where their ECEC cohorts are learning. This allows them to connect

“As we are educating and informing students, we’re also doing the same for parents and for school partners. What we really want to do is get them to understand manufacturing and how it has evolved, how it’s different, debunking some of those myths that manufacturing is dark, dirty, and dangerous and instead showing the advancement of the industry and career opportunities.”

-Autumn Russell, Vice President, Diversity and Inclusion, Early College, Early Career



students, and employers, to resources which help students stay on the career pathway.

Keys to Success

Collaboration is the first key to success from Russell's point of view. In the ECEC program, partners — employers and schools — are included in decision-making. This creates buy-in and establishes accountability and a sense of ownership of results. In 2020, MAGNET started having more consistent strategic discussions with ECEC employer partners to improve their process. Before any big decisions are made about how ECEC works, partners are brought to the table to give feedback to ensure an inclusive process. Individual teachers and parents are part of the collaboration too. They play a big role in the recruitment process because they are likely to see an awareness and interest in a student that would typically be hard to uncover just through an interview or application.

Ongoing improvement and data-driven decision making also inform MAGNET's success. While all key components have been in the ECEC program from the start, they have gone through iterations. For example, at the beginning MAGNET had mentorship in a contracted role, and the mentor would engage with over 40 students. MAGNET quickly learned that relationship development was very important with students. Now mentorship is an in-house position and more accessible and available to students more often. Another example of an improvement is the hiring and interviewing process. A representative from MAGNET and an employer interview prospective students together. This has led to more inclusive hiring practices and helped make better pairings between talented students and employers.



“We want to make sure that the flow of communication is there, between a supervisor working with one of our students, the student, and MAGNET. Consistent communication allows us to address any issues, whether performance-based or culturally-based. There can be translation issues that stem from people coming from different cultures and generations.”

-Brittany Becker, Program Manager of Early College, Early Career

Outcomes

In 2020 MAGNET received a grant from the National Science Foundation to create a robust system to measure outcomes. MAGNET works with two external partners to access and track student data, as well as Ohio's central repository for all employment, salary, and educational data. Reporting has shown that 84 percent of students who successfully completed the program

are currently in manufacturing careers, college, or a combination. ECEC participation also shows significantly higher scholastic achievement and graduation rates compared to non-ECEC students. Research shows that high school students taking courses in-line with college curriculum and career readiness are more likely to apply to college and find early job placement.¹ ECEC has not been in operation long enough to show long-term outcomes, but early data is in line with these findings. There are also positive outcomes for those students who explore other paths. Should a student not want to attend college and they pursue work somewhere other than where they interned, they still have their industry certification.

From the start, ECEC built a commitment to racial, gender, and socioeconomic equity into their program. ECEC is bringing educational and work opportunities to predominantly inner-city, low-income youth, with 78 percent of ECEC students coming from low-income, predominantly African American communities. MAGNET has also improved its outreach to female students, increasing the percentage participating from 18 percent in the first cohort to 22 percent in 2019. In 2019, nearly

¹ 2020 Building A Grad Nation Report, authored by Civic and the Everyone Graduates Center at the Johns Hopkins University School of Education, and released annually in partnership with the Alliance for Excellent Education and America's Promise Alliance. <https://www.americaspromise.org/report/2020-building-grad-nation-report>

600 9th and 10th grade students learned about manufacturing careers in an intensive, culturally appropriate, and meaningful way. Seventy 11th and 12th graders were placed in paid internship positions while also taking high school and college courses and getting professional development coaching. Students earned an average of \$10,000-\$15,000 in internship positions while training for their future.



The Future [Scaling]

MAGNET has seen growth each year: more students, parents, and teachers attending manufacturing awareness events; more students participating in ECEC cohorts; more schools joining as partners; and more employers hosting interns. The pandemic impacted the recruitment process and slowed down some of the growth, which has created a space and opportunity for MAGNET to evaluate its scaling process. The question to define a scaling strategy is: *how can MAGNET build a better and sustainable ECEC model post-pandemic?* A sustainable ECEC starts with increasing student recruitment and MAGNET is evaluating how to increase the number of students involved. They're asking questions like, *is it more effective to add another school with only a handful of students the first year, or get new students from one of the 10 schools they are already working with?* And while historically high schools have been their primary recruitment partner, MAGNET is considering building relationships with new community-based organizations to find interested students.

Russell also recognizes that future growth is dependent on the economics of running the program. After the early learning and changes, ECEC is in a position to better understand the cost per student, and the cost of the program overall. With their data collection and reporting process happening in parallel, MAGNET can understand how investments in different staff, events, partners, and

programs impact outcomes. This gives them a chance to optimize costs and increase or decrease investments in different aspects of ECEC.

The second component to financial sustainability is diversified funding. In 2020, ECEC was 100 percent grant funded, 85 percent coming from philanthropic grants. MAGNET and partners are exploring how to attract investment and revenue. This means looking into possible funding through the public school system because MAGNET and partners are contributing to student education, providing fee for service work for employers since they are providing HR related services, and working with the state to utilize funding tied to traditional workforce development models.

The last element needed to scale is ongoing education of people and organizations — teachers, administrators, parents, employers, other workforce development organizations — about manufacturing and diversity, equity, and inclusion. MAGNET is involved in helping make a larger cultural shift: changing the minds of parents, teachers, and students about manufacturing; changing the perception that college is the only path to higher education; and changing how employers hire, train, and respond to what they perceive as a non-traditional workforce.

Bill Swan

Training & Development Specialist

Swagelok

If you ask Bill Swan how he got into manufacturing, he would say that he stumbled into it. In the late 1980s, he had a successful plumbing business and got numerous new home construction contracts. Then almost overnight, it all fell apart.

“The Gulf War hit, and new home construction went very low,” recalled Swan. “I had four kids at home, and I needed a job. So in between what little plumbing contracts I did have, I supplemented that with some part-time work.”

It was a difficult decision for Swan, who until that point only wanted to grow his plumbing business into the best service provider of the kind in his community. He loved helping customers pick out plumbing fixtures, and working on new home construction projects that last a lifetime. Nevertheless, at that moment, he found himself turning away from his personal vision for his family’s sake.

“I went to a temp employment agency, and they sent me to Swagelok. I filled out a resume and was hired,” said Swan. Two weeks into his new part-time job, he came to a surprising realization that he loved it. “I’m not going anywhere,” Swan said to himself at the time. “I gave up on my plumbing business.”

Why did a man with an entrepreneurial vision of his own, put that vision aside for a manufacturing job where he had no experience?

“I loved Swagelok’s culture, values, respect for teamwork, innovation, and desire to serve their customers, without fail,” explained Swan. “So when

I started adding up all these elements, I felt like if I was to build my ideal business, it would be this.”

Three decades later, Swan is Swagelok’s Training & Development Specialist.

Things fell in place for him at the right time, with the right company. When he looks back on how he got to where he is now, it all seems like it was meant to be. “I think what happened to me was fate, where I landed into a job where the culture, the competitive nature of being number one, and just helping their customer win was a personality connection for me,” explained Swan. “I had no real desire to run a machine, but I loved the culture. It’s been a blessing for me and it landed in my path.” He loves his job so much that it does not feel like work.

Now, Swan helps young people purposefully pursue manufacturing, and not find it by accident as he did. He encourages them to find a company with a culture and career paths that line up with their personality, and not just a job or individual task. For him, focusing on career pathways stimulates the mind to look beyond a paycheck and towards overall values. When the values of a company match those of the employee, that is where true love for the work lies, according to Swan.

He provides industry presentations to high school and college-level students, sharing Swagelok’s culture to



the young generation, but he'd like to reach kids at the middle school level. "Initially, I spoke with and recruited high school students that weren't planning on going to college, and if they were going to college, did not want to leave home so they chose a community college." He noticed that many were joining manufacturing simply to be employed without any understanding of what career pathways they could take. "To help steer the right-minded students, we want them to get some information at their disposal before they reach high school," explained Swan. "We want to fill the manufacturing pipeline with the right students, so we're not wasting their time, as they embark on their career or enter programs like MAGNET. This serves the broader manufacturing community."

Other than MAGNET, Swagelok is involved with eight other Early College Early Career (ECEC) programs in the Cleveland area, but Swan does not care which path students take as long as it is the best path for them. When they hire someone out of an ECEC program, Swan noticed that the retention rate after one year was significantly higher. ECEC programs give Swagelok recruits who are looking for a career, which helps them stay with the company much longer.

"It's been a humbling prospect that Swagelok created a position that provides the opportunity to help young adults with making informed career decisions," Swan said. "I help to point them in a direction that can lead them to a life-changing career opportunity. I see young people, coming out of these programs, getting job offers where they have the opportunity to build a rewarding career. It's gratifying to see."

Damon Holmes

Principal

Ginn Academy

When Ginn Academy principal Damon Holmes went to college, his mind was on athletics more than education. He knew he wanted to continue playing football and going to college was the way to make it happen; deciding on a major was secondary. He changed majors until he took a chance on an education class as a way to earn a few credits. He loved the class and switched his major one last time to education.

“And 25 years later, I’m still in it,” said Holmes. His own experience, going to college for the wrong reasons, is a testament to why Ginn Academy works with their students to create individual life plans. The other reason is that after a decade as an educator, he realized that the educational structure was preparing students to pass state tests in preparation for college, but not preparing them for anything else.

“As I began to see students leave for college only to return without graduating, feeling they had wasted time and money and had no life plan, I knew we had sent them on a fool’s errand. We hadn’t taken the time to know the students, specifically how they viewed their future and how they saw themselves becoming a contributor to society. What exactly was their life plan? I knew we needed to change things.”

At Ginn Academy each student’s life plan is designed by a guidance counselor, an industry or college partner, and the student. Students take aptitude tests and a life coach goes over the results of the test with them. From there, the student and the life coach design a roadmap leading to the student achieving their goals. The exercise is driven by the student; the professionals are there to

support and guide, not to force them down a predetermined path.

When students fail to get admitted to MAGNET or have an interest that is not related to manufacturing, Holmes finds other programs and opportunities for them to pursue. “We have a number of partners, but we don’t have everything,” said Holmes. “We had a student who wanted to be a dentist, but we didn’t have a partnership with a dentist or dental program. So we called around to dental schools to see what we could do to help that student get introduced to the dentistry profession.” While the student attends classes at Ginn, Holmes and the other educators involved in the process will seek out the opportunities to help students with internships or other programs. It is very helpful to the students, because many teenagers are not aware of the intricacies of certain professions and the pathways to get there. Having educators do that work for them is a responsibility Holmes takes seriously.

“That’s our job. As adults, as educators, our job is to show kids as much as we possibly can, about what the world offers and help them figure out where they fit,” declared Holmes. “If we don’t do that, if all we do is focus on how well they do on standardized tests, then shame on us.”



The pandemic has meant that Holmes no longer sees students in person on a daily basis. Although he does miss them, he hopes the adjustments the academic sector is making leads to a post-pandemic conversation to re-imagine educational structures.

“(As educators) we’re in a service industry, and how we provide services should be routinely reviewed. It doesn’t always have to be bricks and mortar, we can rethink things,” he said. Questioning why students are taught certain things and not others, how they are taught, and the time it takes to teach should all be on the table, according to Holmes.

“I’d love to offer my students every possible opportunity within the walls of Ginn Academy, but space and financial constraints make that impossible. But if I know there’s another building or another school within the city or state or in another state, even another country, offering a class that students could benefit from, why can’t they take that class? During the pandemic we have learned that virtual learning is a viable option. In the post-pandemic educational world, I see us being able to access resources from every possible avenue and not being limited to the walls of our buildings or district.”

Holmes hopes that post-COVID the academic sector does not return to conventional thinking just because it is easier, familiar, and inexpensive. He feels that there should be more flexibility in how students learn because the economies of the future will require people to constantly adapt and think strategically. Passing a one-time standard test will not be enough.

“I’m really excited to be part of this change. With the few years I have left in this game, I hope to really make a difference by helping kids, and changing this whole landscape.”

Jana Bernard

Quality Inspector

Elyria Plastics

Every weeknight, Jana Bernard spends at least two hours doing quality certification, trigonometry, and calculus homework before going to bed at 9pm. This Lorain County Community College (LCCC) student cannot afford to pull all-nighters, because at 7am the next morning she begins an eight-hour shift as a quality inspector at Elyria Plastics. She started working there the day after graduating from high school.

“At work, I’m doing the rounds on the production floor checking everything. I do that about four or five times in that eight-hour period,” described Bernard. “I do a walkthrough with third shift in the morning and then a walkthrough with second shift so that we check up on each other’s work. And then I’ll put that in the logbooks where everybody can read it, every shift can read it, and the supervisor can read it too.”

By studying quality certification in college, Bernard can be hired by almost any manufacturer in the United States. None of this would have been possible without joining MAGNET in her sophomore year of high school in 2017. When a teacher told her about the program, she decided to try it out to see if she would like it. Her brother is in an apprenticeship program at LCCC, training to get his journeyman’s card, which made her want to study manufacturing even more. “He inspired me by telling me all the cool things he was doing at work,” Bernard said. They studied in the same engineering class during their junior and senior years of high school, where she was again inspired by some of the projects that he was working on. When her teachers saw that she was good at it, he encouraged her to complete the program. Today, they both work at Elyria Plastics.

Bernard acts as the eyes and ears for the company’s customers. In her role, she makes customers feel confident that the company will produce parts according to their standards. “Quality is the last stop before it gets to the customer,” she said. “We’re the final say on whether a part is good or not. If it’s not, we save it from being sent out the door.” Indirectly, this vital role makes Bernard part of the marketing department, because damaged or unacceptable parts will hurt the company’s reputation.

As one of three women in Elyria’s quality assurance department, Bernard knows how challenging it can be for women in the industry. “It’s not just about being a woman, it’s about being a 19-year-old woman, in a predominantly male field,” Bernard said. Her mother worked as a shipping and receiving manager for Shiloh Industries for 12 years. “She gave me a fair warning about the struggles when I first entered. She was actually really worried about me when I first started in manufacturing, thinking that it would hurt my self esteem, and that I would be just dragged through the mud.”

Being so young, Bernard has found it difficult to earn the respect of some of her peers, most of whom are men. At first, many thought she was a dilettante fresh out of



high school just looking for money. However, once they saw that she was really good at her job, they realized that she may have been fresh out of high school, but she knew her stuff. Still, Bernard admits that she has to be very strategic in how she does her job so that as many coworkers as possible continue to respect her.

“If a 19-year-old girl is telling you how to do your job when you’re 60, that’s not my fault,” quipped Bernard. “If you did the job right the first time, I wouldn’t need to tell you to fix anything.”

Observing how hard her mother worked as a single parent to support the family is one of the reasons Bernard is so focused on excelling at work and at school. “She worked 12-hour days pretty much my entire life. So I saw the struggle. I saw the exhausted woman plopping herself on the couch every night. I’d hear her complain about how her male coworkers treated her,” recalled Bernard. “It just makes me want to go in there with bull horns and kind of just pave the way so that nobody else can be treated like that. I don’t like seeing people get treated like that. So that’s why I work so hard and diligently.”

Rahim Nichols

Internship Coach

ECEC

The Early College Early Career (ECEC) program helps manufacturers find and train talent by connecting them with local high school students. As ECEC's Internship Coach, Rahim Nichols focuses on building foundational relationships with both the students and the program's industry partners. These relationships are key for developing and maintaining smooth and consistent communication with employers. Whether it is an employer letting him know about an intern's great day or their habit for tardiness, Nichols learns about it quickly.

"Once students start their internships, I speak with the employers on a regular basis," explained Nichols. "We receive feedback and monitor our students' progress using our Three-C Model: where can we coach, correct, and congratulate?" Nichols obtains these progress reports from employers during monthly phone calls. For example, an intern who completes a task and then picks up their phone until receiving further direction might receive a feedback of "correction." Nichols' job is to let that student know that instead of wasting downtime, they can demonstrate initiative by asking their supervisor if there is anything else that needs to be done, even sweeping the floor. By listening to this correction, the intern can show the employer their commitment and engagement.

"Whenever we get those coaching or correction moments from an employer, I follow up with the students and make sure that we're addressing those moments in a timely fashion," explained Nichols. "We help them with these soft skills in their junior year before they've officially started their internship, and then we continue to do the work during their internships as well."

When Nichols provides feedback to an intern, he approaches it from a positive and constructive angle, highlighting areas of success and opportunities for growth. He may congratulate the student on their overall demonstrated work ethic and enthusiastic engagement on the job as well as coach them in the importance of not coming back from lunch late. "We don't want the interns to feel like we're just trying to beat them down," explained Nichols. "We want to congratulate them, but also hope they see that there are some things that they need to correct at the same time."

Between the monthly phone calls, Nichols receives texts and emails from employers giving him snapshots of how interns are doing. These small moments of communication allow him to deal with problems in real-time, before a concern escalates. "I don't want to wait for a month to go by, then to finally hear about an issue that happened three weeks ago," Nichols explained.

He wants industry partners to know that he is there to support them as they support their students. These close relationships, which he built over lengthy phone calls and quick texts, benefit the interns because it gives them support as they are trying to get into manufacturing.



Nichols has only been with MAGNET since February 2020, but he has enjoyed seeing how enthusiastic students are about the program and manufacturing. As he got to know the students, and hear how the program has changed their lives, it encouraged him in his new job. When interns enter the workforce, they have the support of people who really believe in them.

“It really motivates us when we get great feedback from employers,” said Nichols. “We put that in our monthly newsletters and make sure our CEO hears those stories.”

ABOUT THE ORGANIZERS



The Urban Manufacturing Alliance (UMA) advances place-based strategies

that create more equitable communities by building community wealth through employment, ownership, and entrepreneurship through manufacturing. We connect and convene hundreds of partners across more than 200 cities, helping them learn from one another, and act as a collaborative ecosystem builder that supports local manufacturing communities and leads a national movement. UMA then partners with the practitioners in those ecosystems to create local, regional, and national research. By documenting the voices, trends, and data emerging from manufacturing communities, we provide practitioners, policymakers, and leaders with the references they need to develop new, equitable models of economic development. From that research, we tell stories, taking the trends we observe and crafting them into rich narratives that capture how our members spark change.



The Century Foundation (TCF) is a progressive, independent think tank that conducts research, develops solutions, and drives policy change

to make people's lives better. We pursue economic, racial, and gender equity in education, health care, and work. In this pivotal moment in America, we stand with a strong and firm commitment to developing policy solutions that will help this country truly realize racial justice. Founded in 1919 by the progressive business leader Edward Filene, TCF is one of the oldest public policy research institutes in the country. TCF pursues its mission by conducting timely, nonpartisan research and policy analysis that informs citizens, guides policymakers, and reshapes what government does for the better. We are distinguished by our commitment to a thoughtful and targeted strategy to bring our work to those who can contribute to making practical affirmative change. Our experts come from academia, journalism, and public service—all with a shared commitment to advancing progressive ideas that benefit the public good.

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APPENDICES

For further learning, please consider:

Industry & Inclusion Opening Commentary

- ↳ [Racial Equity and Advancing the Future of Manufacturing](#)

Industry & Inclusion Project Webinar Takeaways & Event Recordings:

- ↳ [Pursuing Equity, Inclusion, and Industrial Rebirth in the Age of Covid 19](#)
- ↳ [Advancing Equity and Inclusion in Manufacturing Credentialing and Technology](#)
- ↳ [Creating the Future Manufacturing Workforce by Enhancing Diversity and Addressing the Skills Shortage](#)
- ↳ [Partnership and Relationship Innovation To Build Race-Conscious Advanced Manufacturing Training Programs](#)

