



Nuts, Bolts & Thingamajigs Foundation

NBT INCLUSION MANUFACTURING CAMPS:

Preparing young adults with disabilities for manufacturing careers

Written by: **HOLLY LEWANDOWSKI**
EVALUATION FOR CHANGE, INC.

Table of Contents

Executive Summary.....	2
Nuts, Bolts, & Thingamajigs’ History and Programming.....	3
Problem Definition.....	4
The Manufacturing Talent Gap	4
Barriers to Employment for Transition Age Individuals with Disabilities.....	5
Solution.....	6
Benefits of Inclusion Manufacturing Camps.....	7
Interested in starting an Inclusion Manufacturing Camp in your area?	8
Conclusion.....	9
About the Author.....	9

Executive Summary

Manufacturers in the U.S. continue to struggle to fill entry level positions and lack a steady pool of candidates for all manufacturing jobs. Transition age young adults and their families grapple with making a smooth transition from school to work using a fragmented system of care and many schools and social service agencies do not provide soft skills training and job training geared toward manufacturing jobs. Nuts, Bolts, & Thingamajigs (NBT), the foundation of the Fabricators and Manufacturers Association (FMA), has developed a program, Inclusion Manufacturing Camps, that provide transition age individuals (typically 16-30 years old) with soft skills training and practical work experiences that prepare them for employment in manufacturing settings. Through the Inclusion Manufacturing Camp program, NBT is trying to solve two problems: close the manufacturing skills gap and provide transition age individuals with disabilities job preparation and skills training for working in manufacturing environments.

After two years of implementing the camps, the key benefits reported are:

- Camp participants gain soft and hard skills learned at camp, during tours of manufacturing plants, and in work experiences working alongside people without disabilities.
- Organizations that serve people with disabilities provide an effective program geared to transition age young adults and their families that is focused on the manufacturing industry.
- Local manufacturers engage with a segment of the population that is currently an untapped talent pool for manufacturing jobs – transition age individuals with disabilities.

This white paper outlines the problem NBT is aiming to solve, the solution, and benefits experienced by people and organizations involved with the Inclusion Manufacturing Camps.

“The camp helped highlight the importance of inclusion and revealed just how valuable students with disabilities are in the workplace.”

-Inclusion Manufacturing Camp Host



Nuts, Bolts, & Thingamajigs' History and Programming

Nuts, Bolts, & Thingamajigs (NBT) is the foundation of the Fabricators & Manufacturers Association (FMA). FMA is a professional organization with more than 2,500 individual and company members dedicated to advocating for the growth and sustainability of the North American metal processing, forming, and fabricating industries. In 1990, FMA foresaw a skilled labor shortage for the U.S. manufacturing industry. To address the shortage, FMA began awarding scholarships to foster the training of students interested in careers in manufacturing. Seven years later, it started a foundation to further advance its mission, and in 2008, the FMA Foundation merged with Nuts, Bolts & Thingamajigs.

In 2005, the foundation expanded its programming to include Summer Manufacturing Camps. These traditional camps target youth ages 12 to 16 with the goal of exposing middle and high school students to manufacturing careers options at an early age. NBT partners with community colleges, trade schools, high schools, and organizations across the country and provides the grant funding, curriculum, and resources needed to host the camps. The NBT camp experience

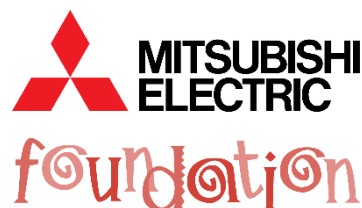


provides hands-on, project-based learning that shows youth the world of manufacturing and introduces them to a variety of career options in their communities. The NBT camp format includes local manufacturing plant tours and guest speakers to help ground camp participants' learning in real-world experiences. Summer Manufacturing Camps serve as an awareness program that introduces youth to career paths and opportunities in the local manufacturing industry. Since the inception of its camp program in 2005, NBT has supported more than 1,050 Summer Manufacturing Camps across 39 U.S. states and 1 in Canada that have served nearly 17,000 participants and their families.



In 2019, NBT saw an opportunity to further its mission to engage, nurture, and excite individuals of all ages in the pursuit of careers in manufacturing by targeting a population that is an untapped talent pool for jobs in manufacturing: transition age individuals with disabilities. With grant funding from the Mitsubishi Electric America Foundation, NBT created the Inclusion Manufacturing Camps model.

Inclusion Manufacturing Camps are made possible with support from these and other generous sponsors:



Problem Definition

Manufacturers in the U.S. have been having a difficult time filling entry level positions and lack a steady pool of candidates for all manufacturing jobs. Transition age individuals and their families struggle to make a smooth transition from school to work when many schools and social service agencies do not provide soft skills training and job training, especially programming geared toward manufacturing jobs. Through the Inclusion Manufacturing Camp program, NBT is trying to solve two problems: close the manufacturing skills gap and provide young adults with disabilities job preparation and skills training for manufacturing environments.

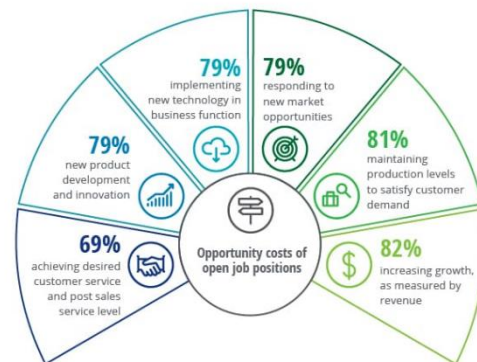
The Manufacturing Talent Gap

According to industry studies projections, manufacturing will continue to grow and nearly 2.1 million jobs will be needed in the US by 2030.¹ While the COVID-19 pandemic initially erased approximately 1.4 million U.S. manufacturing jobs², the manufacturing sector provided more jobs toward the end of 2022 than it did pre-pandemic.³ Despite this successful comeback, manufacturers continue to identify workforce challenges. Most companies surveyed (72%) for the Manufacturers' Outlook Survey in September 2023 reported a top challenge was the inability to attract and retain a quality workforce.⁴

While the inability to attract and retain a quality workforce implies the need for a skilled workforce, an analysis of the fastest-growing occupations in manufacturing over the next decade showed that all the occupations except for one do not require formal postsecondary education.⁵ Current survey data and future projections both identify filling entry-level positions as a challenge. This challenge has a direct impact on manufacturers being able to meet market demands. Nearly 80% of manufacturers surveyed reported that unfilled jobs had a moderate to very high impact on multiple aspects of business such as maintaining production levels to meet customer demand, supporting production innovation and development, and responding to market opportunities as well as implementing new technologies within the factory.⁶

Consequences of not being able to fill jobs stretch beyond lower production levels

Share of manufacturers surveyed who indicated the following as the top consequences of not being able to fill jobs



Source: Deloitte analysis of data from multiyear Deloitte and The Manufacturing Institute skills research studies.

Deloitte Insights | deloitte.com/insights

¹ Wellener, P., Reyes, V., Ashton, H., & Moutray, C. (2021) Creating Pathways for Tomorrow's Workforce Today: Beyond Reskilling in Manufacturing. Deloitte Insights Magazine, Retrieved from:

<https://www2.deloitte.com/us/en/insights/industry/manufacturing/manufacturing-industry-diversity.html>

² Ibid

³ Gamble, J. (2022) October Jobs Report: Manufacturing Makes a Comeback. US Department of Labor Blog. Retrieved from:

<https://blog.dol.gov/2022/11/08/october-jobs-report-manufacturing-makes-a-comeback>

⁴ Moutray, C. & Frances Holland, M. (September 2023) NAM Manufacturers' Outlook Survey, Third Quarter 2023. Retrieved from:

https://www.nam.org/wp-content/uploads/2023/09/Manufacturers_Outlook_Survey_Write_Up_Q3_Sept2023_Final.pdf

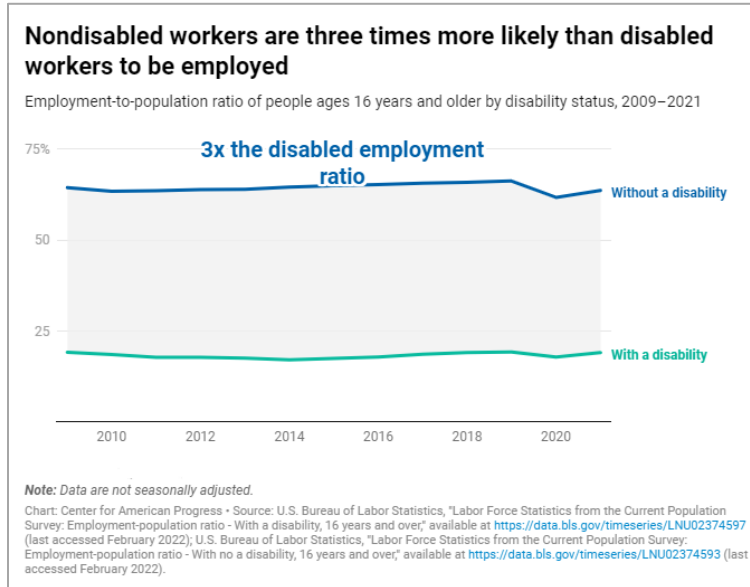
⁵ Wellener, P., Reyes, V., Ashton, H., & Moutray, C. (2021) Creating Pathways for Tomorrow's Workforce Today: Beyond Reskilling in Manufacturing. Deloitte Insights Magazine, Retrieved from:

<https://www2.deloitte.com/us/en/insights/industry/manufacturing/manufacturing-industry-diversity.html>

⁶ Ibid

Barriers to Employment for Transition Age Individuals with Disabilities

People with disabilities are a group which has untapped talent for jobs in manufacturing, yet they experience significant barriers to employment. People with disabilities are much less likely to be employed than people without disabilities⁷, work fewer hours⁸, and are more likely to have income less



than \$15,000⁹. These income and wealth gaps are compounded by employers' lack of awareness to create inclusive workplace environments to support workers with disabilities, labor laws, and inclusion criteria for benefits. People with disabilities are often concentrated in low-paying occupations, provided fewer hours worked that can be at least partially attributed to income limits for receiving SSI and Medicaid, and face job prospects that formally underpay through Section 14 (c) of the Fair Labor Standards Act.¹⁰

Transition age individuals with disabilities (ages 16-30) face many barriers to employment. They are fifteen percent less likely to be employed, more likely to be unemployed and not in school, and more likely to live in poverty when compared to transition age individuals without disabilities.¹¹ Transitioning from school to work poses challenges for people with disabilities and their families. They often have complex needs such as health care and assistance with independent living.¹² In places where there is not an integrated system of care, families must look for and engage multiple service providers to get their students' needs met. Schools tend to be a place where families are provided supports and/or referred to outside service providers. When youth age out and transition out of school, families are often left to find and maintain services on their own.

⁷ Persons with a Disability Labor Force Characteristics 2021

⁸ Ives-Rublee, M., Khattar, R., & Roberts, L., (2022) Removing Obstacles for Disabled Workers Would Strengthen the US Labor Market. Center for American Progress. Retrieved from: <https://www.americanprogress.org/article/removing-obstacles-for-disabled-workers-would-strengthen-the-u-s-labor-market/>

⁹ Centers for Disease Control, Barriers to Participation Experienced by People with Disabilities

¹⁰ Ives-Rublee, M., Khattar, R., & Roberts, L., (2022) Removing Obstacles for Disabled Workers Would Strengthen the US Labor Market. Center for American Progress. Retrieved from: <https://www.americanprogress.org/article/removing-obstacles-for-disabled-workers-would-strengthen-the-u-s-labor-market/>

¹¹ Cheng, L., & Shaewitz, D. (2022). The 2022 youth transition report: Outcomes for youth and young adults with disabilities. Washington, D.C.: Institute for Educational Leadership.

¹² Patnaik, A. (2023) Together, We Can Increase Meaningful Employment Opportunities for Youth with Disabilities. Mathematica Blog Post. Retrieved from: <https://www.mathematica.org/blogs/together-we-can-increase-meaningful-employment-opportunities-for-youth-with-disabilities>

Studies have shown that youth with disabilities who had a paid job, an internship, or volunteer opportunity that had responsibilities and a substantial time commitment were more likely to be employed as young adults.^{13 14} Given the positive outcomes of these studies, it is imperative that employers are educated on the benefits of hiring young adults with disabilities and aided with recruiting, hiring, and training these individuals into their workforce.

Solution

The new NBT Inclusion Manufacturing Camp program aims to provide transition age individuals with disabilities practical skills training and job opportunities that can develop into long-lasting careers in manufacturing. Each Inclusion Camp exposes participants to local manufacturing companies through site tours, allows participants to engage in interactive activities designed to improve job readiness and 'soft' skills, helps individuals gain confidence in their abilities, and provides opportunities to explore careers in various manufacturing environments. Camp participants gain real-world experience working on the shop floor alongside people with and without disabilities with the intention of extending the work experience into a job or internship with the manufacturer.

Over the last two years, NBT has awarded funding to six organizations that work with children and adults with disabilities to implement Inclusion Manufacturing Camps. In 2022, NBT partnered with agency staff from Trinity Services and Helping Hand in the Chicago area to host an Inclusion Camp at Triton College in River Grove, Ill. A second Inclusion Camp was hosted by VPI, Inc. (formerly Valley Packaging, Inc.), in Appleton, Wisc. In 2023, NBT partnered with three new host organizations and one returning organization to facilitate four Inclusion Manufacturing Camps. Those organizations are Boone Center, Inc. in Saint Peters, Mo.; Teaching the Autism Community Trades (TACT) in Englewood, Colo.; The Haven in Sarasota, Fla.; and VPI, Inc., returning for a second year. As a part of the NBT grant award, host organizations are required to establish partnerships with local manufacturers who contribute to the camps through plant tours, hands-on activities, and/or work experiences for camp participants.

“Post-secondary transition for individuals with disabilities and their families is tough. This [camp] was a mechanism to support not only [the individual] through this unique experience, but now we're connected with families, and we can outline what that roadmap is going to be for their student's [future]. They then have more access to other funded programs that we can help them [navigate].”

- *Inclusion Manufacturing
Camp Host*

¹³ Patnaik, A., Harrati, A., & Musse, I. (2022) Promoting Readiness of Minors in Supplemental Security Income (PROMISE): Youth's Pathways to Education and Employment, Mathematica, Inc.

¹⁴ Schutz, Michele A. and Carter, Erik W. 'Elevating the Employment Outcomes of Transition-age Youth with Disabilities: Four Decades of Intervention Research'. 1 Jan. 2022: 1 – 21.

Benefits of Inclusion Manufacturing Camps

Participating host organizations, camp participants, and manufacturers expressed multiple benefits they experienced because of implementing or participating in the Inclusion Manufacturing Camps. Camp

“The confidence that the [participants] embraced over the four weeks of camp was just amazing to see, and [it was great to watch them] come out of their shell. They learned that there are [job options] that can be purposeful to their lives and that [work] could be interesting.”

- *Inclusion Manufacturing
Camp Host*

participants benefited from the full immersive experience that the camps provided. According to camp participant surveys, the camps raised participants’ awareness of manufacturing jobs by 49% and awareness of the training needed for manufacturing jobs by 20% when comparing pre-program to post-program surveys. In addition to increasing their awareness of manufacturing jobs, participants learned valuable soft skills such as interviewing, communication within a work environment, and working as a team. They were given opportunities to apply that learning through tours at manufacturing companies and real-world employment experience. Results from the camp participant surveys indicate that camp participants improved 5 out of the 7 soft skills by the end of the program. Hosts’ staff shared that they could not tell camp participants from manufacturing company workers during the work experience portion of the camp, indicating that camp participants were fully integrated into the work environment. Hosts also observed camp participants gain confidence in their

abilities over the course of the camp, and camp participants spoke about how the camp broadened their career options. Many camp participants reported that their favorite part of the camp was working. By the end of the 2023 camp season, seven out of the seventy participants accepted job offers and/or internships with partnering manufacturing companies.

Organizations that implemented the camps used the program model to complement their existing programs. In some cases, the Inclusion Manufacturing Camps provided hosts with an opportunity to offer targeted programming to participants of other existing programs. In other cases, the host organization promoted the camp opportunity to new audiences. Staff expressed that their camps allowed the agency to expand their programming, recruit participants from a previously unserved age range, and/or add programming that would act as a ‘feeder’ to already existing career-track programming. Hosts also shared that due to implementing the camps, they created new partnerships or strengthened existing

partnerships with manufacturing companies and schools within their communities. In turn, these partnerships have increased the organizations’ visibility within their respective communities potentially attracting more manufacturers, camp participants, and families to the program.



Manufacturers also benefited from supporting the host organizations and getting involved with the Inclusion Manufacturing Camps. The companies benefited from the increased visibility in the community, especially to the families of camp participants, through their partnerships with the organizations that implemented the camps. Most importantly, manufacturing employers benefited from interacting with young adults with disabilities through site tours and work experiences, thereby



connecting with a pool of prospective future workers. As stated above, multiple manufacturing partners were inspired to offer jobs or internships to camp participants, and many companies were encouraged to adapt their facilities to be more accommodating to workers with disabilities. As more employers understand the immediate and long-term benefits of hiring candidates from this talent pool, NBT predicts the positive changes in company culture will lead to a better bottom line for manufacturers.

Interested in starting an Inclusion Manufacturing Camp in your area?

If you represent or know of an organization that serves transition age individuals with disabilities - or if you work for a manufacturing company that is looking to hire workers - and would like information about hosting an Inclusion Camp in your area, contact:

Nuts, Bolts & Thingamajigs Foundation

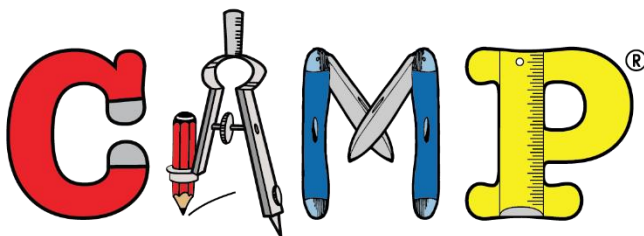
foundation@fmamfg.org

(888) 394-4362

Grant applications for NBT Inclusion Manufacturing Camps are accepted November 1 through January 31. Learn more at fmamfg.org/foundation/inclusion.



INCLUSION MANUFACTURING



Conclusion

While the Inclusion Manufacturing Camp model is in the early stages of implementation, the benefits to camp participants and their families, the host organizations, supporting partners, and local manufacturers are clear. The camps provide young adults with disabilities with the soft skills training, hands-on learning, and real-world work experiences they need to obtain employment in manufacturing jobs. The camps also help host organizations provide an effective program to transition camp participants and their families from education to employment. Lastly, the camps raise awareness of local manufacturing jobs and give local manufacturers an opportunity to interact with a segment of the population that is currently an untapped talent pool for manufacturing jobs. As NBT continues to grow the Inclusion Camp program, it is important to track longer-term outcomes that can potentially be impacted such as:

- creating a larger pool of candidates for manufacturing jobs in the community;
- filling the manufacturing talent gap thereby increasing production, innovation and development, and meeting consumer demand; and
- changing company cultures and encouraging manufacturing workplaces to be more inclusive by hiring more people with disabilities.

About the Author

Holly Lewandowski, President
Evaluation for Change, Inc.
hollyefc@gmail.com

Holly Lewandowski, president of Evaluation for Change, Inc., has worked in program evaluation for over 20 years and founded her program evaluation and research consulting firm 12 years ago. Holly's program evaluation work has primarily centered on education spanning from early childhood to post-secondary with institutions such as the Ounce of Prevention Fund, Illinois Education Research Council, City Colleges of Chicago, Westat, Roosevelt University and University of Illinois at Chicago. In addition to conducting program evaluations and small research studies, she has provided capacity building on creating evaluation systems with nonprofits, foundations, and educational institutions such as the National Philanthropic Collaborative of Young Women's Initiatives, Little Brothers – Friends of the Elderly, Robert Crown Center for Health Education, and University of Illinois at Chicago. Additionally, she has held positions in evaluation and research at DePaul and Northwestern Universities. She earned her MA in Sociology at DePaul University and BA in Anthropology at Antioch College.

NUTS, BOLTS & THINGAMAJIGS
The Foundation of the Fabricators & Manufacturers Association, Intl.

2135 Point Blvd. • Elgin, IL 60123
fmamfg.org/foundation



© 2023 Nuts, Bolts & Thingamajigs, the Foundation of FMA. All rights reserved.