



**Make The Future™**

**Connecting Girls to Manufacturing**

# Nine Best Practices of Equitable Recruiting Strategies

## CASE STUDIES: EARLY ANALYSIS

RELEASE DATE: APRIL 2022



**TOYOTA**  
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**NATIONAL ALLIANCE FOR PARTNERSHIPS IN EQUITY**

Funded by the Toyota USA Foundation ▲ Research by WhitworthKee Consulting, LLC



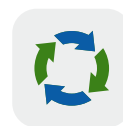
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**INSPIRE**

**EXPLORE**

**EXPAND**



**A NOTE TO THE READER.** This study and report was done by an external evaluation company. Our ongoing work will have expanded methods, broader participation, and more detailed analyses that fully highlight the potential impact of the nine best practices of equitable recruiting strategies. *Join our mailing list for future updates.*

# Executive Summary

Addressing the traditional marginalization and exclusion of women and people of color from manufacturing careers is one of the major strategies put forth to solve the skills gap. This type of demographic shift will require, among many things, significant and intentional outreach efforts with students, educators, and parents. To address the workforce gap, the Toyota USA Foundation awarded funding to the National Alliance for Partnerships in Equity (NAPE) to create promotional tools and outreach strategies for educators and career recruiters to use with students and parents at the K-12 and community college level.

The National Alliance for Partnerships in Equity Education Foundation (NAPEEF), as a part of the Make the Future™ Initiative (MTF), has been tasked with curating best practices for increasing the participation and retention of women and girls, particularly Black, Indigenous or Native women and girls of color, in Science Technology Engineering and Math (STEM) and Career and Technical Education (CTE) leading to careers in advanced manufacturing.

**WhitworthKee Consulting (WKC), in collaboration with NAPE, played a key role in supporting data collection and evaluation efforts aimed at assessing ongoing initiatives. These initiatives are focused on conducting case studies to showcase lessons learned from two AMT sites located in San Antonio, Texas, and Vincennes, Indiana. Additionally, the team worked to validate the effectiveness of the Nine Best Practices for Equitable Recruitment strategies.** Specifically, the report includes both qualitative and quantitative evidence to support the two sites' effectiveness in recruiting women and women



of color into the AMT program. The case studies uncover lessons learned and validate the nine best practices from the literature review developed in MTF Phase I. The assessment and data collection activities were conducted through virtual means. Findings from the case studies will be used to inform the field about best practices and used to guide the next phase of the work. **The program objectives are to:**

- Increase the interest of girls enrolled in secondary schools, especially girls who identify as Black, Indigenous, People of Color (BIPOC), in advanced manufacturing by 25% in targeted communities.
- Increase the participation of girls, especially BIPOC girls, in advanced manufacturing programs of study by 25%.
- Increase the participation of women and girls, especially BIPOC women and girls, in advanced manufacturing postsecondary programs by 25% in targeted communities.
- Develop further MTF resources for use in professional development.

- Increase the number of educators accessing the MTF resources by 100%.

***This case study was guided by the following research questions:***

1. What exactly is happening to recruit and retain women?
2. Are the sites employing best practices based on the literature review?
3. How are the two organizations successfully attracting and retaining women in their manufacturing programs? How likely are women to remain in the career field after graduation?
4. What are the challenges experienced at each site and how do they align with the problems observed in other communities?

**Findings and recommendations that emerge from this report will help create tools and resources for educators along with providing informative data to make “real-time” modifications to current programs and practices, which educators can apply when engaging students, educators, and staff who are involved in Advanced Manufacturing Technician (AMT) programs.**

This report presents the findings from the case studies and is organized by the following sections:

- Profiles of the Two Participating AMT Sites
- Methodology
- Nine Best Practices of Equitable Recruitment Validation
- Conclusions



**Make the Future™, Connecting Girls to Manufacturing** aims to encourage women and girls, especially those of color, to take part in STEM education and pursue advanced manufacturing careers.

Access NAPE’s tools to help educators, counselors, administrators, and recruiters break down barriers that limit females and other historically underrepresented student groups from taking education paths that can prepare them for high-demand advanced manufacturing careers.

[napequity.org/make-the-future](http://napequity.org/make-the-future)



# Profiles of Two AMT Sites

The AMT programs in San Antonio, Texas, and Vincennes, Indiana, were chosen as the two AMT sites that demonstrated effectiveness in recruiting girls and women and girls and women of color into the AMT program. The distinctions are outlined below.

## Texas Federation of Advanced Manufacturing Education

### SAN ANTONIO, TEXAS

The AMT program is a partnership between Alamo college campuses and Texas Federation of Advanced Manufacturing Education (TX FAME) manufacturers (Toyota, Kautex, HEB, CH Guenther and Sons, CAT, Metalsa, Toyotetsu, CPS Energy, Joyson Safety Systems) for a career in advanced manufacturing. The TX FAME Alamo chapter allows students to work on a combination education/training program to earn an associate degree as an Advanced Manufacturing Technician (AMT) at Alamo college campuses. Specifically, students attend classes at a local community college and work for a local employer—all while being paid a competitive wage for their work.

The demographic profile for the 2019-2022 student cohort participants was 12%- 22% women, who were mostly women of color. The overall retention rate for participants from the 2019-2022 student cohorts ranged between 72%-81%.

### GRADUATES OF BOTH PROGRAMS GAIN THE FOLLOWING:

- ♦ Associates Degree of Applied Science in Advanced Manufacturing Technology
- ♦ 60 college hours
- ♦ 1,800 hours of work experience

## Southern Indiana Federation of Advanced Manufacturing Education

### VINCENNES, INDIANA

The AMT program is a partnership between Vincennes University, area manufacturers and other organizations in the Southern INFAME (So.INFAME) Chapter. Manufacturers in this chapter include: AmeriQual, Berry Global, The Hershey Company, Toyota, Toyota Boshoku Indiana, Toyota Boshoku Illinois, and Thyssenkrupp Presta. The goal is to meet the skilled worker needs of the growing manufacturing sector.

The AMT program is designed to prepare students within the So.INFAME companies for a career in advanced manufacturing. The So.INFAME chapter allows students to receive hands-on learning, take courses at Vincennes University, and gain real work experience continuously until graduation. Some partners offer paid summer employment prior to starting VU classes. The entire program lasts six consecutive semesters including summer sessions.

Students earn a wage while attending college and gain priceless work experience with a global manufacturing leader. Over two years, students can earn as much as \$40,000 in salary, which with planning can cover a student's educational expenses. The overall retention rate for participants from the 2019-2022 student cohorts ranged between 80%-90%.

# Methodology

The case study initiative included both qualitative and quantitative data collection methods.

## QUALITATIVE DATA COLLECTION METHODS

WKC research associates conducted virtual focus groups and interview sessions with 11 manufacturing industry leaders and employees, as well as college educators/administrators to gather qualitative data. Interviews and focus groups were facilitated to identify: (1) the successes and challenges experienced in the recruitment of students into advanced manufacturing, (2) strategies used to address recruitment challenges, and (3) the implementation and application of the Nine Best Practices of Equitable Recruitment Validation

The initial approach to recruiting participants for focus groups began with NAPE leaders sending email invitations to industry leaders and local community college campus administrators.<sup>1</sup> The industry leaders sent email invitations to the student participants. Seven one-hour interviews and two focus group sessions were conducted between May and June of 2021 via Zoom meetings.

Each interview or focus group was organized by role and position in the respective AMT programs. Specifically, across both AMT programs, the focus group participants included manufacturing industry leaders and college educators/administrators, as shown in **Table 1**.

Focus group findings are included in the report to allow for the inclusion and acknowledgment of all current and past experiences within the two AMT programs. The interviews and focus groups were conducted using a semi-structured focus group protocol. Each participant was required to give consent before recording the focus group session. The interviews and focus group sessions were transcribed for analysis. The data from the interviews and focus group sessions were analyzed using NVivo® qualitative software and field notes. The findings of this qualitative data are presented with the use of direct quotes to highlight key points and provide validation of the Nine Best Practices for Equitable Recruitment. The quotes are shared without identifying the name of the source; however, the source's AMT program affiliation is provided.

**Table 1** *Focus Groups and Interview Participation across AMT Programs*

Participant Group		Sample Size
So.INFAME AMT Program, Vincennes, IN	Vincennes University Campus educators/administrators interviews	2
	Indiana Toyota Industry employees and leaders interviews	2
	Vincennes University student focus group	4
TX FAME AMT Program, San Antonio, TX	Alamo Colleges District Campus educators/administrators interview	1
	San Antonio Toyota Industry employees and leaders interviews	2
	San Antonio Economic Development Office employee focus group	4

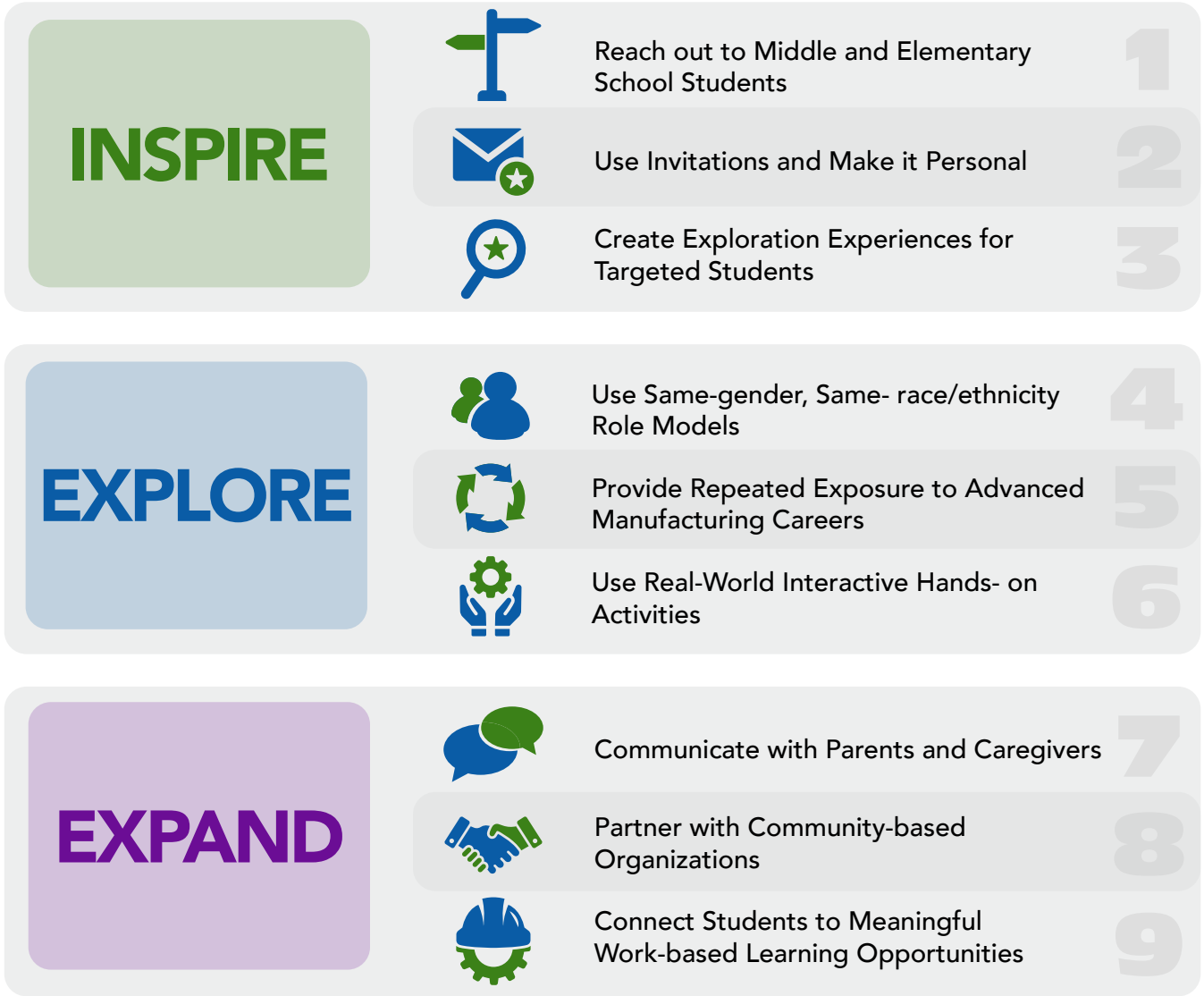
<sup>1</sup> The number of industry leaders, local community college campus administrators, and students who received email invitations is unknown.

QUANTITATIVE DATA COLLECTION METHODS

A survey was disseminated to 82 current and former student participants in both AMT programs. The survey included questions that asked about their AMT recruitment and program experiences. Thirteen students responded, which yielded a response rate of 15.7%. Nine of those respondents completed the survey in its entirety. Eight respondents (80%) identified as White/Non-Hispanic. Seven respondents (78%) were graduates of the AMT

program and the remaining two (22%) were current AMT students. The majority of the respondents (89%) was based in Vincennes, Indiana (n=8) and one respondent<sup>2</sup> was based in San Antonio, Texas. All AMT graduates are currently employed in manufacturing.

Figure 1 Make the Future™ Equitable Recruiting Strategies



2 NAPE's comment on the WhitworthKee Report: There were many more young women in the San Antonio cohort. Since only 1 student responded, while their experiences are valid, the perspectives of the diversity of the population may not fully be represented in the data and results.

# Validation

## NINE BEST PRACTICES OF EQUITABLE RECRUITMENT

The NAPE Education Foundation's Make the Future™ program, funded by the Toyota USA Foundation, offers the Nine Best Practices for Equitable Recruitment to provide educators, counselors, administrators, and recruiters with helpful strategies to overcome barriers that often prevent women and other historically underrepresented student groups from pursuing advanced manufacturing educational paths and careers.

As shown in **Figure 1**, the Nine Best Practices of Equitable Recruitment spread across three major strategies: inspire, explore, and expand. Qualitative and/or quantitative evidence will be presented to demonstrate how effectively the two AMT programs were able to implement each of the Nine Best Practices across the inspire, explore, and expand strategies.

## INSPIRE



### STRATEGY 1

#### Reach out to Middle and Elementary School Students

The idea behind this strategy is to engage students and provide advanced manufacturing exposure and experiences as early as possible such that those early experiences could influence later decisions to pursue STEM careers. One industry leader applied Strategy 1 by preparing middle and high schools to become ambassadors (peer-based role models and advocates) of the AMT programs, as described:

“

So we work with all the school districts and then independently with the administration at all those individual schools, as well on education about the program, who we're looking for as far as who we feel would be a good fit for the program, and then making sure that they understand not to just label it with their interpretation of what this program is or what the career might look like. We ask that we are the ones that give the students that information so they can make that decision on their own. INDUSTRY LEADER



## STRATEGY 2

### Use Invitations and Make it Personal

The essence of this strategy is that sending a personal invitation can often be the spark that ignites interest in advanced manufacturing careers and a tool to debunk societal stereotypes about who participates in STEM careers or STEM career preparation pathways.

The most common and effective personalized invitations to experience the AMT program have come from current participants or program alumni. This strategy is best exemplified by this quote from an industry leader →

Furthermore, the student survey responses provide clear evidence of Strategy 2 best practices being applied by the two AMT programs. As shown in **Figure 2**, all students agreed or strongly agreed that the invitations they received:

- Increased their interest in participating in the program.
- Felt personally relevant.
- Appealed to work values related to intrinsic and extrinsic motivations, prestige, and social responsibility.



I always ask them, 'So how did you hear about the AMT?' And I take 80% of them, it was through somebody who's already been through the program who loved it and told them about it. It's through somebody that they know that works here at Toyota and knows about the program and told them about it. And then some of them it's through their school systems. But a lot of it is that relationships that we build, that word of mouth that gets it out there because until you're really interested in it, and you're speaking to someone you respect what they say, then you start listening and understanding, oh, I want to ask more questions about that program. INDUSTRY LEADER

**Figure 2** *Impact of Personal Invitations (n = 9)*





### STRATEGY 3

## Create Exploration Experiences for Targeted Students

The essence of this strategy is to combat stereotypes and give targeted students a low-stakes, evaluation-free environment to learn and explore a STEM career preparation pathway in the community.

There is clear evidence to suggest that students across both AMT programs received opportunities to practice skills in collaborative spaces and experienced the thrill of STEM with other women who worked in manufacturing and/or were alumnae of the AMT program.

“

They just know that there's careers here that women can do. And they can do anything here, no matter what they try to do, they can do it. So by getting them to come into the plant, we have a great experience center, get the tours. We do co-op programs. We do summer programs. We do a lot of STEM activity. You just got to keep getting in front of them to understand, hey, this is in your backyard, this is something you could do, and this is what it's like to do this. INDUSTRY LEADER

“

And the first step is getting all of the students involved in STEM programs in that they can actually put their hands on a little robot, they can program things, that can see how cool it is. And for females, you have to be able to show them, this is not a dirty environment. You're not turning wrenches all the time. There's a lot of technical, high level of technical training that we give and that they can do the job. So the first step is getting them aware of it, then getting them involved in the STEM activities. And then nurturing that relationship, because you got to build that relationship or someone will grab that female up while she's in STEM. And you got to provide them with pathways to say, depending on what they want to do, here are pathways we have here at Toyota.

INDUSTRY LEADER

# EXPLORE



## STRATEGY 4

### Use Same-gender, Same- race/ethnicity Role Models

Having role models can help underrepresented student groups see themselves in a STEM pathway and career and thereby offer a power strategy to combat societal stereotypes about who participates in STEM careers or STEM career preparation pathways. Role models can also enhance students' vicarious experiences and STEM-related self-efficacy development.

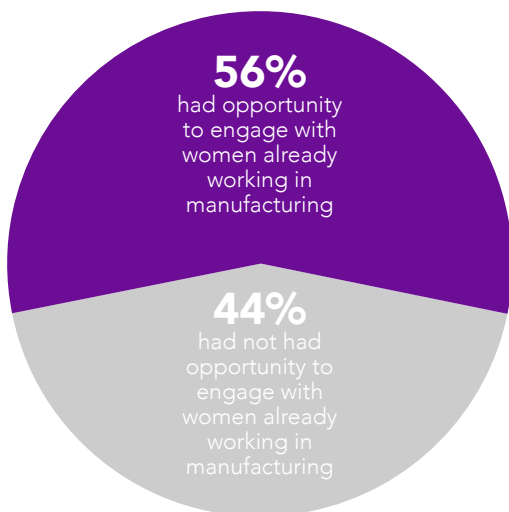
Prioritizing the vicarious experiences of women was a strategy the AMT programs used to help the participants envision an advanced manufacturing career as exemplified by the following industry leader.

“

We try to bring representation, as far as females, to specific activities or engagement activities that we're partnering with a school or with another community organization, because we feel it's important for the females in the audience to see that there are females doing this role and to try to help break down some of the barriers and misconceptions about the career. INDUSTRY LEADER

“

Definitely taking the females that are already involved or have been involved in the AMT program that now work for us full-time, other females in this industry that were already working here before the AMT program, I try to include them as much as I can whenever we're doing engagement activities. I feel like that's been the most beneficial so that... I can communicate that this is a career that's equal opportunity and great for any person, but them being able to see a female there and hearing it from them that they did this program, they're working in this career field, the opportunities that they've had since they've graduated from the program, I feel like that's been the most impactful. INDUSTRY LEADER



Student responses were mixed when it came to whether they had the opportunity to engage with women already working in the field. As shown in **Figure 3**, 56% agreed, while 44% disagreed with that statement.

**Figure 3 Engagement with Women in Manufacturing (n = 9)**



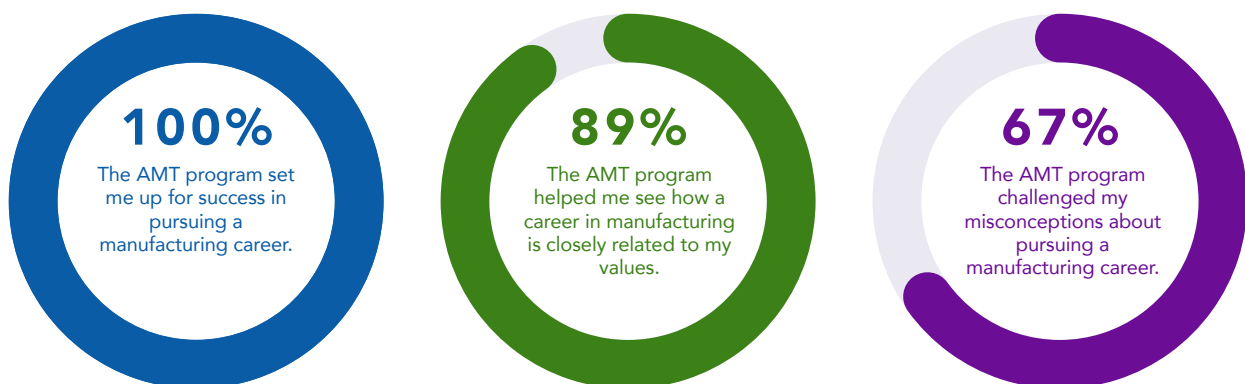
## STRATEGY 5

### Provide Repeated Exposure to Advanced Manufacturing Careers

The idea behind this strategy is that repeated exposure to advanced manufacturing careers gives students an opportunity to have a wide variety of experiences with the career and opens them up to a wealth of options and opportunities.

Most students agreed that participation in the AMT program sets them up for success in pursuing a manufacturing career (100%), challenged their misconceptions of the field (89%), and allowed them to see how a manufacturing career aligned with their personal values (67%) (**Figure 4**).

**Figure 4 Impact of AMT's Program Exposure (n = 9)**





## STRATEGY 6

### Use Real-World Interactive Hands-on Activities

Real-world interactive hands-on activities can effectively support the development of students' self-efficacy and competencies around STEM, and subsequently influence their choice to pursue STEM career pathways.

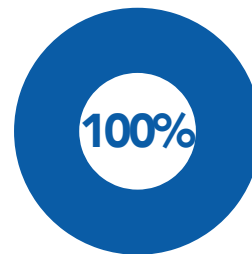
The interactive hands-on activities that are happening in the AMT programs are connecting skills and content to real-world outcomes. The authentic learning contexts are providing participants with hands-on experience and skills that enhance employability, not only at the site at which they completed the AMT program, but also at other sites and in other manufacturing roles. Evidence of the positive benefits of real-world, interactive hands-on activities are exemplified by the following quote:

“

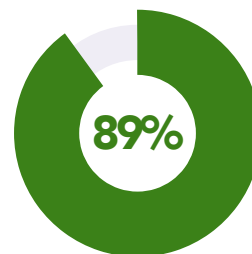
So if you're learning the theory and then you see the application, now all of a sudden it's an aha moment. Aha, I understand. I understand exactly what you're teaching me on the theory side right now because I see how that robot's working, or I see how that proximity sensor is picking up a piece of metal, then it's sending that input into the computer. They then are getting it much more than anyone who's just going through college and doing the theory. So those partnerships are priceless, really. **INDUSTRY LEADER**

As shown in **Figure 5**, the use of storytelling, real-world connections, and student-centered learning were the equitable instructional strategies that were experienced by most student respondents. Perceptions of whether course instruction reached traditionally marginalized learners were mixed.

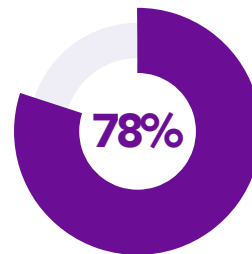
**Figure 5 Use of Real-World, Interactive Hands-On Activities (n = 9)**



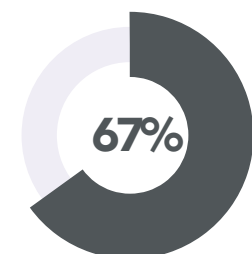
The AMT program used storytelling as a teaching technique.



The AMT program made real world connections to manufacturing.



The AMT program centered student learning in course design.



The AMT program was designed to reach diverse learners.

Student survey responses show that the hands-on experiences students received reflected the three C's (creativity, caring, and collaboration), which are connected to student engagement and motivation. All students agreed that their experiences allowed them to collaborate with others (100%) and gave them the opportunity to do work that positively benefits society (100%), and the majority agreed that the experiences also allowed them to express their creativity (89%) (**Figure 6**). When asked what they considered the most impactful aspects of their AMT experience, several indicated the hands-on experience:

“

Nothing beats experience and hands-on learning. I was able to use hand tools, build hydraulics/pneumatics systems, run electrical wiring, bending and routing conduit, wiring motor controls, write logic, and teach robots. Without this hands-on portion of the AMT program, I do not think I would be as successful as I am today and as advanced in my learning of the manufacturing field. AMT STUDENT

**Figure 6** Exploration Experiences of AMT Students (n = 9)



# EXPAND



## STRATEGY 7

### Communicate with Parents and Caregivers

The essence of this strategy is to engage the most important influencers of the targeted students' STEM-related self-efficacy and career pathway decisions.

Giving parents access to the field of manufacturing as a whole and specifically to females working in manufacturing has been an effective strategy the two AMT programs have used to address myths about and shift mindsets towards advanced manufacturing pathways.

“

Early on, I can remember issues where I had a few high school seniors that were female that had approached me, said that they were interested in the program, but they were struggling with their parents at home saying they didn't think that would be a good fit for them. So that's just as simple as inviting them to our facility, communicating with the parents about what the program is, introducing them to females that are here and that are doing this career field and why it's a great option. That doesn't always work. Sometimes the mindset and the culture that has developed over the years about what these careers are and who they're good for are definitely still in place today, unfortunately. INDUSTRY LEADER

“

We invite their parents to some of the information sessions that we have. They come with their son or daughter and they are able to ask the questions, get them answered. So it's a well-oiled machine when it comes to making sure parents have all the answers and students have all the answers. And the key is just making sure, like I said, from a relationship building and the touchpoints that they know it's there and they can get it. INDUSTRY LEADER

All students agreed that their family and friends were supportive (**Figure 7**). However, their responses were mixed regarding whether their family and friends had the opportunity to see what they were doing in the AMT program. Only 67% of students felt their families could see what they were doing in the AMT program and 56% said the same of their friends. High school counselors were reported as not being as supportive: 67% of respondents agreed they were, while 33% disagreed.

**Figure 7** Extent of Support of AMT Program (n = 9)

Do you agree that the following were supportive?



Do you agree that the following had the opportunity to see what you were doing?





## STRATEGY 8

### Partner with Community-based Organizations

Establishing partnerships with community-based organizations can be an effective strategy to connect to hard-to-reach parents and students, create a strong workforce pipeline for STEM careers, and foster expanded student STEM-related experiences.

Partnerships with community-based organizations provided some of the earliest exposure to the two AMT programs. Churches/religious-based organizations, Girl Scouts®, and STEM-related organizations and clubs are named as strong partners in providing STEM education and career development opportunities. For example:

“

We partner with the Junior Achievement. We partner with the Project Lead the Way, we partner with FIRST Robotics, we partner with 4-H, the Girl Scouts, Boy Scouts. You have to have that partnership with all these different programs so that you can get in front of the student. So there's not one thing that solves it all. It takes again, a multifaceted approach to be able to get the touch points and build the relationships depending on what the student is involved in. So if they're involved in FIRST Robotics, we can get involved with them there. If they're involved with Project Lead the Way we can get involved with them there, and if they're in 4-H, we can get involved with them there because 4-H does stand out. INDUSTRY LEADER

“

There are several [women] organizations that we go to. But I'll tell you we've done some events like the Women in Engineering event where we talked about the AMT Program, and we had women from multiple companies come and speak from engineering, that's what they're in, the engineering perspective. I think those have been very successful. And then when we have former AMT graduates that are young ladies or women, those are specifically great to hear from because they've gone through the program and they're successful. And either they're now in a technician role or they've even gone beyond that. INDUSTRY LEADER



## STRATEGY 9

### Connect Students to Meaningful Work-based Learning Opportunities

Work-based opportunities are an additional way to provide students with early exposure to many facets of STEM careers and they can also provide an opportunity for the businesses and industry to build strong and diverse workforce pipelines. The two AMT programs

encouraged students to participate in on-the-job training and tutoring programs to support them in their academic work. The industry-university partnership strengthened curriculum design and development opportunities.

“

I think that's a huge opportunity for these students to look at this career pathway, because it's very structured, it's very hands on. When you go to college, your first year, and you're taking advanced mathematics courses, and you're in the classroom, and especially now during COVID you're online, it's incredibly difficult. But when you can see and you can do and you can put your hands on it, your learning curve, your learning absorption goes way up when you can see it and do it and repeat it. And so that's why I think this program is so impactful. That's why I think it is so sought after now that people know about it, but they're just not a lot of individuals that know about it. And a lot of it is because they've been geared, 'You need to go to college, and you need to be an engineer because you're smart.' Or, 'You need to be this because you're smart.'

INDUSTRY LEADER

“

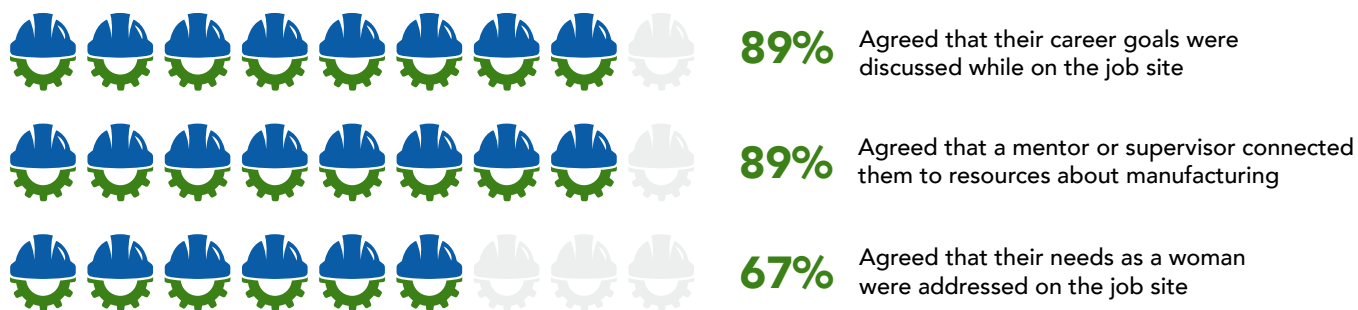
We have to continue to evolve the curriculum to meet the demands that we see here at the plant. And that partnership then as we continue to evolve, that curriculum is extremely important because the students come in a lot of times teaching us things that we don't know. So the university is getting a lot of their inputs that are saying, here are things that are happening in the world from a technology standpoint, and then we get our inputs, but they may not be the same. So if we can bring them together we can make a very powerful curriculum and training program.

INDUSTRY LEADER

As shown in **Figure 8**, the majority of students agreed that they had opportunities to discuss their career goals while on the job site (89%) and had a mentor/supervisor on the job that

connected them with helpful resources about manufacturing careers (89%). Of note, only 67% agreed that their needs as women were addressed on the job site.

**Figure 8 Work-based Opportunities (n = 9)**



When asked what limitations or barriers exist that could prevent other women from participating in the program, one student said:

“

Long hours, strict schedule, and uniforms. Many women who are entering or when in college have kids now and with the long hours many women cannot do that due to having to take care of the kids in the evenings. Strict schedule means if those kids I just spoke about have a doctor's [sic] appointment or get sick that women would have to take an occurrence for that, and once you accumulate three you're out. AMT STUDENT



# Conclusions

The qualitative and quantitative findings yielded from this study collectively highlight the TX FAME and So.INFAME AMT programs as demonstrative case studies for how to effectively apply Make the Future's™ Nine Best Practices of Equitable Recruiting strategies.

## INSPIRE

It is evident from these case studies that the two AMT programs' recruitment efforts best represented the following **Inspire** strategies:

- Materials that appealed to the participants' social work values, intrinsic work values, and prestige work values
- Targeted female recruitment from local high schools (Creating ambassadors—peer-based role models and advocates—within middle and high schools to recruit students to AMT programs was highly effective.)
- Leveraging program alumnae and school connections to promote manufacturing pathway opportunities and career preparation

## EXPLORE

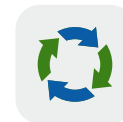
The most compelling **Explore** strategies included:

- Continuing to expose women students to advanced manufacturing facilities and AMT classrooms
- Defining a clear pathway to advanced manufacturing careers that was intentional (All the AMT program graduates reported working in manufacturing careers today.)
- Providing real-world interactive activities that were authentic, motivating, and student-centered

## EXPAND

Lastly, the most compelling **Expand** strategies included:

- Partnering with community-based organizations to create early exposure to advanced manufacturing career pathways and sustain women's interest
- Creating opportunities for women and their families to access manufacturing careers with direct exposure to the AMT program experiences
- Providing AMT program participants with ongoing support, resources, training, and access to advanced manufacturing career opportunities as a way to sustain interest and build efficacy.



Overall, there seems to be several successes related to the recruitment of students into manufacturing, including increasing knowledge related to the field of manufacturing by parents, educators, and guidance counselors; disrupting parental perception that manufacturing is a dirty and dangerous job; offering intentional direction and mentoring for students from middle to high school; and understanding the local cultures of feeder high schools. With regard to the recruitment of girls and women, two significant challenges were identified by respondents: 1) the lack of images of women and minority women in manufacturing and 2) the demanding hours and work schedule of the manufacturing career. Participants indicated a number of strategies to address the recruitment challenges of students in manufacturing. These strategies included: 1) having educators and guidance counselors visit manufacturing facilities, 2) collaborating with some high schools and manufacturers on education-related projects, and 3) implementing an advanced manufacturing day and a career collaborative group and using printed

marketing tools and social media as a form of marketing.

The strategies used by the two AMT programs to address challenges regarding the recruitment of women in manufacturing included collaboration with community organizations, supporting current industry women and women of color to recruit in the local community, and including parents in the recruitment process. While the participants appeared to be using various strategies to increase the number of students recruited into advanced manufacturing, they pointed to a need for large-scale marketing targeted at women (e.g., advertisement on television, internet, and on social media platforms, and national STEM workshops with a focus on manufacturing) to change parental perceptions and educate students, parents, and counselors about the manufacturing industry. ▲

REPORT DESIGNED BY M. POLLOCK, MAY 2023

**Make the Future™, Connecting Girls to Manufacturing** aims to encourage women and girls, especially those of color, to take part in STEM education and pursue advanced manufacturing careers.

Access NAPE's tools to help educators, counselors, administrators, and recruiters break down barriers that limit females and other historically underrepresented student groups from taking education paths that can prepare them for high-demand advanced manufacturing careers.

[napequity.org/make-the-future](https://napequity.org/make-the-future)

