Make the future
Connecting Girls to Manufacturing

Over the next decade, the United States will need to fill nearly 3.5 million advanced manufacturing jobs, but 2 million jobs may go unfilled because we do not currently have enough people trained to do them[1].

We are missing an opportunity to fill these in-demand jobs if we don't find ways to attract females and underrepresented populations more effectively. The current numbers underscore the need for more targeted recruiting efforts.

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10% of the manufacturing workforce is black or African American

16.6% of the manufacturing workforce is Hispanic or Latino

29% of the manufacturing workforce is women[2].

You play a big role in shaping students' pathways into the workforce and impacting the future of US advanced manufacturing.

Many groups, especially females, students of color, students with disabilities, English language learners, and students from low socioeconomic backgrounds are significantly underrepresented in high-skill, high-wage jobs in advanced manufacturing. These inequities exist in part due to our stereotypical way of thinking about careers. For example, nurses and elementary school teachers are often portrayed as females, mechanics as males, engineers or leaders in advanced manufacturing fields as white males. These stereotypes create hidden obstacles, but you can help break down barriers that limit females and other historically underrepresented student groups from engaging in educational pathways that can prepare them for careers in advanced manufacturing.

NAPE's nine research-based strategies can help you confirm equitable practices you are already using, tweak approaches that could easily be transformed to attract more girls, and consider new equitable practices for your recruiting strategy. They will also help you consider how you can tailor your messaging and events to motivate girls to engage, explore and enroll. After each strategy, we point you to relevant links and resources for further reading.

1 Top 20 Facts About Manufacturing. National Association of Manufacturers. Retrieved from http://www.nam.org/Newsroom/Top-20-Facts-About-Manufacturing/
2 Employed persons by detailed industry, sex, race, and Hispanic or Latino ethnicity; Labor force statistics from the Current Population Survey. Bureau of Labor Statistics. Retrieved from https://www.bls.gov/cps/cpsaat18.Htm

Equitable Recruiting Strategies

Inspire, Explore, Expand

First, we offer three strategies to help you inspire girls to engage. These strategies will help you inspire them to attend your recruiting events and learn more.

Once you have their attention, the next step is to keep it. A big part of your job is teaching potential students about the opportunities in advanced manufacturing. We offer three strategies to help you design your recruitment events and use equitable instructional strategies.

Finally, enriching the recruiting experience by engaging parents, businesses and community organizations can amplify the impact of your events and messages. We offer three strategies aimed to help you develop the key partnerships with influential people in students' lives.

Inspire

Strategy 1: Reach out to Middle and Elementary School Students

It's never too early to get students thinking about their futures. Students' decisions to pursue STEM careers, such as advanced manufacturing, are directly influenced by experiences at the elementary and middle-school levels, yet often efforts to engage students are directed at the high school level. Many such activities are designed to recruit students to enroll in advanced course offerings, to engage in summer experiences, and to take part in informal learning environments, after-school clubs, or other experiences meant to get them interested in advanced manufacturing careers. These efforts, unfortunately, may be too little, too late.

A wide body of research has shown that young students', and particularly girls' beliefs of STEM and advanced manufacturing are influenced very early in life. Before they've left elementary school, many girls have already internalized negative stereotypical gender beliefs and low efficacy about their STEM ability. These beliefs reduce girls' interests and lower their confidence in their ability to complete STEM-related tasks, such as working with technology. Unfortunately, because young girls also spend less time interacting with technology and science-related games and toys, students will have few opportunities to counter these negative cultural messages.

Fortunately, students' beliefs of themselves as it relates to science or math fluctuates with time. Providing young students with multiple experiences in- and out-of-school can positively shape their future and spark interest in STEM and advanced manufacturing careers. In one study, middle school students who participated in science or math activities outside of school as early as 5th grade tended to have a greater interest and identification with STEM in high school. Engage students and recruit them to the right pathways earlier, and they should be more likely to engage, persist and succeed. Try adapting your current recruitment activities for older students so they are age-appropriate for younger girls. Don't reinvent the wheel.

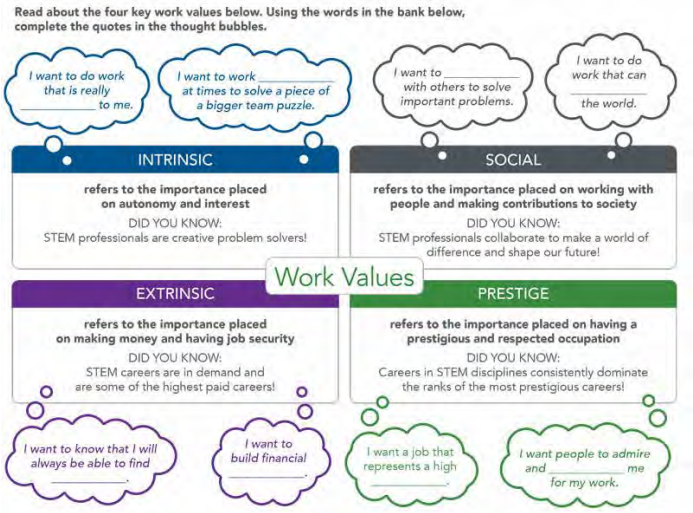
Inspire

Strategy 2: Use Invitations and Make it Personal

Societal stereotypes about who participates in certain career fields or career preparation pathways send strong messages to girls that they don't belong and are not welcome. This can stop them from taking the risk to explore nontraditional careers, such as advanced manufacturing, and can impact their self-efficacy regarding their ability to succeed in STEM careers. Even if girls are welcome to your programs and events, their perceptions of the societal stereotypes may stop them from volunteering, signing up, or taking other action to participate.

Sending a personal invitation to a female student to participate in an "invitation-only" activity can be the incentive she needs to overcome her doubts and ignite the spark to want to learn more about careers in advanced manufacturing. Send a personal invitation from an adult of prominence (Principal, Superintendent, Business Person) to a female student or an individual from another underrepresented population informing them that they are receiving a special invitation to participate in an outreach activity to explore careers in the exciting, creative, and high-tech field of advanced manufacturing. Personalize the invitation to highlight the student's entrepreneurial spirit; strong creative thinking and problem-solving skills; and science, technology, engineering, and math (STEM) skills. Showcase the event as hands-on, low risk and exploratory. A team of STEM educators at Folsom Cordova Unified School District in California used this strategy to increase the participation of girls in Project Lead the Way. They were successful in increasing female enrollment in Introduction to Engineering Design from four to fourteen in one semester.

In addition to personalizing the invitation, getting the messaging right can have a big impact. People tend to value work in one of four ways. Boys tend to be more motivated by extrinsic work values, but girls are more often motivated by the other three work values. Make sure your messaging is aligned and balanced. Touting salaries and earning potential is a talking point, but you should balance out the talking points with messages that relate to the creative thinking professionals in the advanced manufacturing field use, how they work together collaboratively, and how they make the world a better place by caring about manufacturing products that make our lives better or easier.



Frequently educators will say that girls are just not interested in nontraditional career fields, like advanced manufacturing. Research has shown that girls will not show interest in a career field before they have had the opportunity to develop some confidence and skill, giving them the indicator that they could be successful and lowering their risk by participating. For women, self-confidence precedes interests and career goals. Therefore, it is even more important that girls have the opportunity to explore advanced manufacturing in low-risk environments that don't require them to express interest before participating. Invite them personally and make them feel special. Don't expect them to volunteer to participate.

Inspire

Strategy 3: Create Exploration Experiences for Targeted Students

Recruiting opportunities that target particular groups of students can combat stereotypes and offer girls and other underrepresented groups in STEM a chance to consider and explore careers in advanced manufacturing. These environments also contribute to a sense of collaboration and community, and provide an opportunity to explore a pathway in a low-risk environment where their performance is not evaluated.

Advanced manufacturing needs employees with advanced manufacturing skills, competencies girls can attain and provide. Girls tend to gravitate toward careers that allow them to be creative, to work in a caring field that provides a positive benefit to society, and to collaborate in teams. Creativity, caring and collaboration are the three C's that have been connected to motivation and engagement for many students, especially women and students of color.

Try focusing your activities and events on the three C's to demonstrate how advanced manufacturing professionals can make a world of difference and help shape the economic future in the United States. For every $1.00 spent in advanced manufacturing, another $1.37 is added to the U.S. economy, making advanced manufacturing the sector with the largest multiplier. Contributing to this economic sector can have a big, positive impact on the country's economy. Also, manufactured products are essential to our health, happiness and safety, and they are often produced in creative and collaborative environments where advanced manufacturing professionals engage in critical and creative problem solving to turn ideas into reality. Provide opportunities for girls to work together in teams to practice skills and produce something, so they can experience the thrill of STEM. Perhaps have them invent a new product together and discuss the many steps and teams involved in transforming an idea to a product. Perhaps have them work in teams to create beautiful metal designs on a laser cutter they can give as a gift.

The U.S. Department of Education's Title IX regulations prohibits single sex classes in institutions of vocational education that receive federal funds, so be sure to consult counsel before embarking on any single sex activities.

Checklist for Success: Inspire

- ☑ Make the invitation special – put it on school or business letterhead.
- ☑ Make the invitation personal – address it to the recipient, use the girl's first name in the salutation, and add a sentence about something they have done to warrant the invitation.
- ☑ Send the invitation directly to the student, but cc her parents or send a complimentary invitation to her family.
- ☑ Invite them to something important – not an event that everyone can attend anyway. It should be a "By Invitation Only" activity.
- ☑ Generate materials that appeal to girls' work values
  - Social work values - working with people and contributing to society
  - Intrinsic work values - autonomy and interesting work.
  - Prestige work values - working in a respected occupation
- ☑ Invite girls to bring one or more female friends to an event.
- ☑ Start with your current recruiting activities and adapt them to be age appropriate for younger students.
- ☑ Create opportunities and events targeting girls.
- ☑ Design events where students of all ages can attend together and learn more about advanced manufacturing and STEM pathways.
- ☑ Be sure the event or activity gives them the opportunity to learn a skill related to advanced manufacturing and to succeed, so they will want to come back to learn more.
- ☑ Be sure to follow-up if the student doesn't respond. A follow up phone call or personal note will let students know you really meant to invite them and you want them to attend.
- ☑ Look for ways to get recruitment materials to younger students by working with museums, the Scouts, or youth athletic organizations.
- ☑ Don't assume elementary and middle school students are too young to benefit from your recruiting efforts.
- ☑ Invite the same girls multiple times, even if they do not come the first few times. Young students' beliefs and interests vacillate, so the timing, frequency of your events, and messaging matter.
- ☑ Don't limit your efforts to distributing flyers and relying on someone else to carry the message.
- ☑ Don't rely on others to promote your event.
- ☑ Go beyond making general school announcements about the upcoming event as your primary way of inviting students.
- ☑ Even if males attend your events in droves, don't expect females will without targeted approaches to attract them to attend.
- ☑ Create promotional materials with photographs of women and underrepresented people doing advanced manufacturing jobs.

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Explore

Strategy 4: Use Same-Gender, Same-Race/ Ethnicity Role Models

One of the key ways to build efficacy is providing vicarious experience. Vicarious experience refers to learning through observing others perform tasks, and it is a key way we develop our own sense of efficacy related to a task. For example, while observing a more advanced student, a novice thinks, "If she can design and construct a working robot, so can I." Role models can provide vicarious experience for girls, and they are especially influential when they are perceived as similar to the observer. For example, when female faculty members and advanced female STEM students interact, the students' self-efficacy grows. Indeed, research suggests that vicarious experience is a particularly powerful determinant of girls' and young women's STEM self- efficacy.

Role models can help students see themselves in a pathway or career. Using role models that represent the diversity in your classroom or recruiting pool can enhance the power of this vicarious experience. If you have guest speakers from the advanced manufacturing industry, make sure to include women and people of color. When you use student ambassadors, try to match them strategically based on their gender and race. When you print information, make sure to select photos of women and people of color. The power of role models is amplified when students perceive the people as similar to themselves and can relate to their stories and life experiences.

Finding and training role models is worth the effort. They can have a big impact on students' beliefs about what they can accomplish. Role models are more effective if students perceive them as similar, because they can more easily envision themselves completing the task or working in the career successfully. Further, role models who have credibility with the learners and demonstrate enthusiasm and competence are more effective. Prompt your role models to establish credibility, speak with enthusiasm, and underscore that their competence has been built through effort rather than innate ability. Encourage them to watch NAPE's 30 minute training for role models on YouTube (http://youtu.be/jAth4rnM5Ug)

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Strategy 5: Provide Repeated Exposure to Advanced Manufacturing Careers

One and done is not enough! Student perceptions of careers change over time, and their knowledge of the wide array of job opportunities in advanced manufacturing is limited. Even if students have family members or other people they know in advanced manufacturing, they may have limited understanding of the variety of skills, pathways and jobs in the field as a whole. Repeated exposure and providing a wide variety of experiences related to advanced manufacturing can help students experience and understand the wealth of options available to them. In addition to starting early by providing opportunities for elementary and middle school students to explore STEM fields and advanced manufacturing, be strategic about the breadth and depth of the information you share. Make sure you are providing repeated exposure to various aspects of advanced manufacturing to showcase the many types of applications for STEM programming.

Career development is a process that occurs over a long period of time and includes many sources of influence. Children are frequently asked what they want to be when they grow up before they understand what a career is, and they frequently answer with responses that are not careers at all. Sex-role stereotypes are formed early, and at-risk students, girls, and minorities often limit their career choices early. Many young people will make a career decision that follows in the footsteps of a parent or close relative, primarily because the career is well-known and the pathway to enter it understood.

The process of helping students see career opportunities that are outside of their own life experience requires significant exposure over many years. It is unrealistic to expect that a student will want to enter a advanced manufacturing career after their first experience with the field. Limited exposure or too much focus on one aspect of advanced manufacturing can also lead to missed opportunities to widen your recruitment pool. Students need repeated exposure, experiences and encouragement to make a career decision that is outside of their life experience.

Explore

Strategy 6: Use Real-World Interactive Hands-On Activities

Interactive hands-on activities are ones where students experience an activity that models or mimics certain careers. Giving girls a chance to try and ideally master a hands-on activity related to a nontraditional career can give her the self-efficacy to pursue that career. Self-efficacy measures a person's perception of his or her ability to achieve a certain goal and is greatly increased by exposure to a task and mastery of that task. Once we try something and succeed, we gain confidence that we can do it again. Self-efficacy and one's career pathway choice are positively correlated, so developing a girl's sense of self-efficacy around STEM can impact her career choices. Providing hands-on activities can fuel self-efficacy related to STEM tasks and competencies that can get her energized about pursuing a career pathway toward advanced manufacturing.

Being hands-on is especially important because it allows students to engage in kinesthetic learning. Studies show that students learn best when learning is active, when they are engaged in hands-on activities, and when they are involved in what they are learning. When students use all of their senses, it helps the brain create pathways that make it easier and quicker to retain information and master concepts, which increase students' self-efficacy.

When developing activities, try designing them with equitable instructional strategies, which include: intentionally selecting teams; rotating roles; making real world connections; using storytelling, and designing student-centered learning.

Intentionally Select Teams

Teams with only one student from a marginalized ethnic, racial, or gender group can be isolating and create a negative experience for the student. Beyond considering social, academic, and behavioral aspects when creating student teams, try to keep at least two students from a marginalized group together if possible.

Rotate Roles

Student roles within a team can be dictated by gender or racial stereotypes. Allowing students to choose their roles initially provides them with some level of comfort. However, requiring students to rotate roles is also important so that they learn new skills. Role rotation also keeps students from feeling limited by gender or racial norms.

The Power of Storytelling

While using a storytelling approach may take a little time, it is a powerful way to engage students, especially those from Native American, African, Latino and Asian cultures.

Real World Connections

Skills and content that are connected to real-world outcomes can motivate students to engage in learning. Authentic learning contexts, such as the ones presented here, are especially effective for marginalized groups such as women in STEM fields. Whenever possible, make learning matter by tying it directly to your community.

Student-Centered Learning and Student Agency

Whenever possible, have students self-select topics and do the work to uncover ideas and apply knowledge themselves, rather than receiving information from a teacher. This process of active learning increases academic achievement, motivation, higher-order thinking, and skill development, and is particularly powerful to engage marginalized students, such as females in STEM fields.

Checklist for Success: Explore

- [x] Find female facilitators or presenters.
- [x] Train your role models and mentors on the following:
  - Positive STEM messages that motivate girls
  - How to dispel stereotypes and challenge misconceptions
  - Work values and how they impact the career decisions we make
  - How to message STEM to appeal to students' work values
  - That success is built through hard work and not simply innate ability
  - Types of information girls find interesting, such as hobbies and approaches to work/life balance
- [x] Start early by implementing culturally relevant exploratory activities with students in elementary grades to show them the wide variety of opportunities.
- [x] Select high school and college students with varying career interests as role models and activity leaders with younger students.
- [x] Work with elementary and middle school teachers to integrate advanced manufacturing career examples into their curriculum and share the resources available through this project to make it easy for them to use.
- [x] Build outreach activities from exposure with elementary students to skill development with middle school students so that by the time students reach high school, choosing to take a pre-engineering class or advanced manufacturing pathway is not such a foreign idea.
- [x] Try a hands-on activity to excite kids about advanced manufacturing. Integrate this activity into your curriculum as a community service project for your students. Give them credit and make it important.
- [x] Plan a field trip or a community service project. Take your high school or community college students to local elementary or middle schools and implement a lesson plan in concert with the teacher.
- [x] Implement the strategies frequently - many times in a school year - to reinforce the understanding of the career field.
- [x] Ideally, have female students tour advanced manufacturing facilities to experience the workplace firsthand.
- [x] Look for local businesses that are participating in Manufacturing Day in October.
- [x] Invite female students to tour AMT classrooms and experience some of the equipment required in the courses.
- [x] Design events that do not have overly complicated tasks. The goal should be for girls to feel success, so they will gain interest and efficacy related to STEM.
- [x] Build a pathway that is strategic and unified rather than a series of isolated events.
- [x] Design activities that allow girls to see various jobs in advanced manufacturing. Avoid overemphasizing one type of job.
- [x] Find opportunities to educate parents, teachers and other influencers about STEM and its role in advanced manufacturing, so they can dispel stereotypes and encourage their students who are capable and interested.
- [x] Avoid talking-head presentations or "watch me" activities. Get kids involved in doing and learning, so they can find the joy in designing or making something.

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Strategy 7: Communicate with Parents and Caregivers

Parents have a huge impact on their children's career decisions, especially for African American and Hispanic girls. Using culturally responsive engagement strategies can greatly influence participation. Engaging parents and providing them with the experiences and information they need to inform and support their daughters successfully is critical to your recruiting effort.

Minority parents are typically less likely to be involved in school-based activities for many factors that have nothing to do with interest. By providing various and regular opportunities for parents to volunteer or participate in your activities and by considering support resources, such as child care or transportation needs, you can increase parent attendance and engagement. Remember that parent engagement doesn't always have to be at events or face to face.

Finding multiple channels to inform parents can increase your chances of success. Emailing, calling, mailing information and posting information via social media channels will expand the opportunities for parents to find information and engage. Try to design two way channels. Have a contest for parents to post photos of their kids doing STEM activities or take photos during a recruitment activity and ask parents to vote on the best photo.

When possible, recruit minority and female role models to help you connect to families. Minority communities are much more likely to become involved when a connector matches or is also of a minority ethnicity (e.g., Hispanic Principal with African American community, or Somali representative with Somali community). You can create parent buddies that commit to helping each other stay informed. If one cannot make it to an event, the other will retrieve information and address questions for her.

Being intentional about providing culturally responsive engagement strategies can ensure you are engaging a network of people who have a powerful influence on how girls view themselves in regard to STEM skills and view the potential of advanced manufacturing pathways.

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Strategy 8: Partner with Community-Based Organizations

Developing a strong workforce pipeline for STEM careers and advanced manufacturing benefits the entire community. Community-based organizations (CBOs) can be a critical link to help you inform and connect with students and their families. They can make connections between the experiences students have while attending community programs and the work you are doing with them in school. They can also help you learn a bit more about the families you want to reach and the best way to work with them.

CBOs expand student experiences through after-school and summer programming as well as supporting in-school activities that align with their missions. Many students perceive CBOs as safe options that can provide culturally relevant activities. These may be the places where students have their first experience with careers in advanced manufacturing or exposure to STEM more broadly. They welcome partners to help them design programming that can be engaging and informative for their students, so they are usually happy to collaborate with you. Organizations like the Girl Scouts, Boys and Girls Clubs, Girls Inc., US FIRST, Destination Imagination, YMCA, churches, community centers, city or county parks and recreation departments, museums, maker spaces, and others are good places to start. Introduce yourself and offer to provide engaging programming to their students or campers. If your activities are successful and students enjoy them, you will soon find you are a welcome visitor and partner.

Community engagement and support of career development initiatives can be a critical element to success. Take advantage of CBOs that share your passion for exposing young people and adults to advanced manufacturing and STEM career pathways. Using CBO resources and programs and engaging the community can help lighten your load and create outstanding partners to provide your students with a deeper experience and critical information about advanced manufacturing careers. These partners are great conduits to connect you to young people and adults, so you can expose them to your program or pathways and eventually inspire them to enroll.

Many CBOs offer after-school and summer informal STEM education opportunities. Here are a few examples to get you started.

The Making Foundation – After School program at the Maker Mart https://www.wdbj7.com/content/news/After-school-activity-in-Roanoke-gives-students-interest-in-manufacturing–412940383.html

Girls Scouts – Find a council (https://www.girlscouts.org/en/about-girl-scouts/join/council-finder.html) Boys and Girls Clubs- Find a club https://www.bgca.org/get-involved/find-a-club

Girls Inc. – Find a Girls Inc. https://girlsinc.org/find-girls-inc/

US FIRST – Start a Team https://www.firstinspires.org/

Destination Imagination – Learn more at https://www.destinationimagination.org/

YMCA – STEM at the YMCA http://www.ymca.net/STEM

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Strategy 9: Connect Students to Meaningful Work-Based Learning Opportunities

While community-based organizations can help link you to the families and students you want to reach, business and industry partners can be valuable as well. They can help you build strong programming by providing speakers or role models, equipment for hands on activities, real world problems to frame your lesson plans, opportunities for field trips and tours, student scholarships, job shadowing, internships, apprenticeships and professionals to serve as coaches, judges of competitions, or tour guides.

Businesses are interested in diversifying their workforce, so your efforts at recruiting girls and underrepresented populations will be strategically important to them. They will want to work with you to build a diverse workforce pipeline that will benefit them in a few years. Think beyond recruiting to building true pipelines for engaging businesses in work-based learning opportunities.

Engaging business and industry on an advisory council is a great way to build work-based learning opportunities for your students and a great way to get business and industry involved with your program. Useful and effective business-school relationships can build pathways for students to have workplace experiences and earn credentials, to engage with mentors, and to learn valuable, relevant skills and technical competencies.

How to establish a business advisory council

The first step is to reach out to all local businesses related to advanced manufacturing in your region. Remember that the members of your council do not need to be located in your town. Any business that would be interested in hiring your graduates would be useful on the advisory council. Once you have identified companies you would like to engage on your council, contact the human resources departments to see if they can connect you to the right person to represent their business.

Recruit individuals who are underrepresented in advanced manufacturing to serve on the council. Their perspective will be very valuable in ensuring your outreach and instructional practices are creating a positive climate for every student. This will also recognize the company's commitment to workforce diversity and show your support to helping them meet their goals.

While the general business advisory council can inform schools about the industries' needs, a more targeted group can establish key partnerships that offer mentoring opportunities, workplace experiences, internships, and other relationships that directly involve working with female students.

The first meeting with a business advisory council should have the following agenda items:

1. Discussion of the workforce needs and any skills gaps from the business members.

   Include a focus on the gaps they may be experiencing in finding diverse candidates to fill critical positions.

   Share highlights of success stories of women and students of color who have completed your program and gone on to higher education or careers in advanced manufacturing.

2. Discussion of current programming and student opportunities that are designed to build workforce readiness

   Share outreach activities you are implementing to increase the participation

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of girls and students of color in your program. Get input and volunteers for help. Share strategies you are implementing to increase the cultural relevance of your instruction to create a positive classroom climate.

3. Have the committee reflect on what they are doing to create a welcoming workplace for diverse employees.

4. Conduct a brainstorming session on potential ways the company can provide workplace experiences for students. These may include mentoring or internship opportunities, the development of an advanced manufacturing career pathway or curriculum designed to place students at the company, or other opportunities for students to engage in authentic learning opportunities that can lead them to future employment or post-secondary training.

   Show NAPE's webinar on effective mentoring (https://youtu.be/wJp4Cte6ZMU) and have a discussion about how these strategies can be applied to all work-based learning opportunities for students.

   Suggest that all employers involved in your work-based learning strategy use the NAPE webinar as a training tool with employees that will be working with students.

Businesses can contribute to building career and postsecondary readiness through the following:

- Job Fairs or Conferences: The school may choose to host an event where business representatives and employees from a number of local companies share information about job opportunities and required skills. Ask companies to include women and people of color as representatives at these events.

- Job Shadowing: Companies can organize opportunities for students to shadow employees to enhance career exploration and awareness of the nature of the business and job. Try to match students with job shadowing partners that are of the same gender or race, if possible.

- Internships, cooperative training, work-based learning opportunities or employment for students: Companies can organize opportunities for students to work at their business, so they can fully understand the expectations of the job and the types of work people engage in. These opportunities can include unpaid or paid work; including full-time, part-time or summer employment. Be sure that students are aware of workplace policies and who to report any issues that may arise if they experience a hostile work environment.

- Mentoring and tutoring programs for students: Employers can provide opportunities for employees to serve as mentors and tutors to students, helping improve academic skills as well as social, emotional, and workplace and employability skills. Try to place students with mentors that look like them and who have completed NAPE's mentor training webinar (https://youtu.be/wJp4Cte6ZMU).

- Promoting student commitment to being drug free. Together, schools and businesses can raise awareness about the dangers of drug and alcohol use and the consequences for using drugs or alcohol on future job opportunities. They can develop drug free agreements that reward students for maintaining a healthy lifestyle.

- Informing curriculum design and development: Business council members can review curriculum materials for technical content accuracy, identify knowledge or skills competency levels and performance standards, help districts secure instructional materials, donate equipment or space for specialized training,

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build pathways to postsecondary programs in advanced manufacturing, and support schools seeking a STEM designation.

- Engaging educators: Businesses can help teachers define how curriculum is relevant in the workplace by providing teachers and other district personnel with information and experiences relative to the businesses in the community. It could include activities like teacher externships and other learning opportunities for educators. Learn from businesses who have been successful in recruiting a diverse workforce and the strategies they have used to retain them. You can translate these same activities to your school and program.

The Advisory Council can also work collaboratively to create a marketing plan to connect families to information about in-demand careers in advanced manufacturing and to engage postsecondary and workforce development organizations to become active members in developing a strong workforce pipeline.

Checklist for Success: Expand

- ☑ Directly involve parents, and particularly mothers, in events and communications to learn more about career opportunities and pathways in Advanced Manufacturing.
- ☑ Use trusted community members (civic leaders, community leaders, school principals and/or teachers) and/or cultural brokers to connect you to families.
- ☑ Utilize multiple channels of communication (phone, email, flyers, social media, etc.) to reach parents.
- ☑ Provide specific opportunities for parents to experience (e.g., hands-on) and learn more about advanced manufacturing, and about guiding their students through choosing a career and entering the advanced manufacturing pipeline.
- ☑ Offer parent/caregiver-daughter hands-on events.
- ☑ Work with career counselors to provide parents with information on how to advise and support their children on career and education goals.
- ☑ Provide support services at public events to reduce barriers to participation, for example child care, free meals, transportation.
- ☑ Use parent testimonials from families who are a part of AMT, or have participated in previous events.
  Help create parent buddies that commit to helping each other stay informed. If one cannot make it to an event, the other will retrieve information and address questions.
- ☑ Make a list of community organizations and call two each week to discuss potential ways to partner.
- ☑ Take time to develop relationships with staff of community organizations where diverse students can be reached
  Invite CBO's to come into your classroom or attend your event to inform students about the pathways they have to offer that can supplement their learning.
- ☑ Offer your services to help teach a lesson, be a volunteer, or make your facility available (with permission of course) to help local programs be successful. Ultimately this will benefit you with students interested in a advanced manufacturing pathway.
- ☑ Invite CBO staff to serve on your Advisory Committee.
- ☑ Invite CBO staff that have a particular expertise to help you with a project or lesson, giving them the opportunity to promote their pathwayming with your students.
- ☑ Be creative about where you look for CBO partners. Find out where students hang-out, participate in after-school and summer activities and find them there.
- ☑ The career field of advanced manufacturing is misunderstood and the commonly held biases about what it means to work in this field can be a significant barrier to getting girls and women to enroll. You have to get out into the community to dispel those myths if you want to change who arrives at your classroom door. It will be well worth the investment of your time and resources.

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Checklist for Success: Expand

- [x] Identify the top 10-15 businesses that hire your graduates and reach out to them to become part of your advisory council.
- [x] Include diverse individuals on your advisory council. If increasing the diversity of your students in your pathway, model this in every aspect of what you do.
- [x] Develop work-based learning opportunities for students in companies that share your diversity goals and have positive workplace cultures.
- [x] Share resources on workplace diversity strategies with all companies you work with in your community.
- [x] If you have a student report a hostile workplace experience be sure to report it to your Title IX Coordinator at your school and follow any school policies completely.