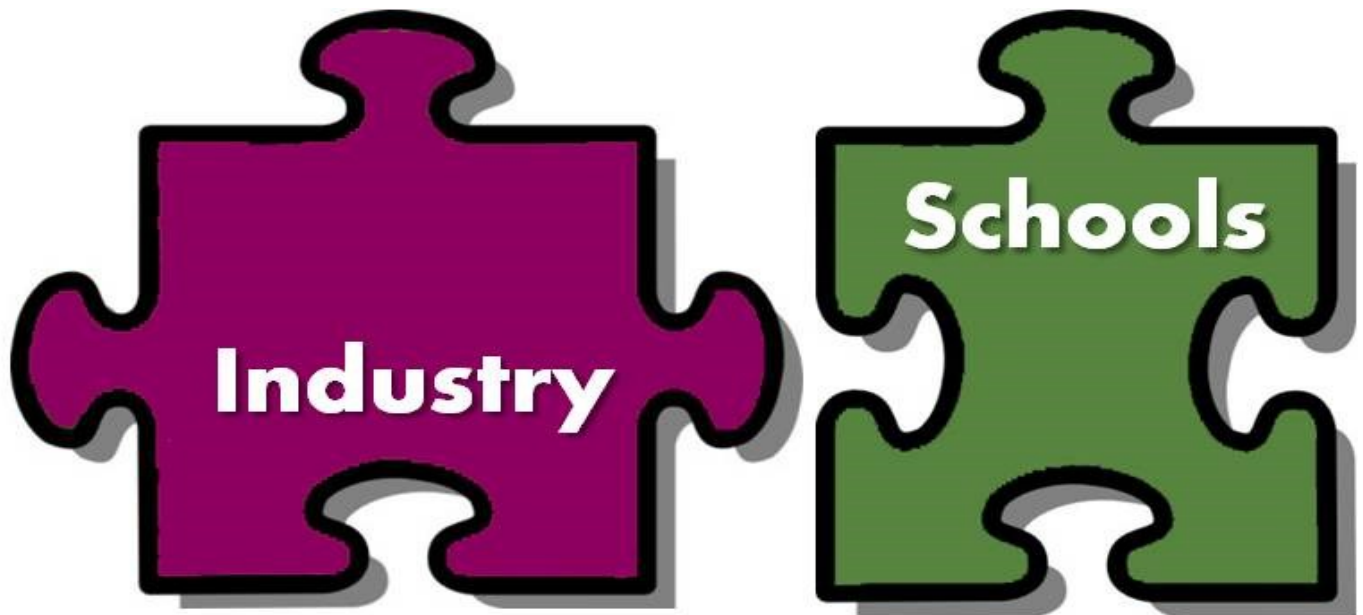




FORGING POSITIVE PARTNERSHIPS:



*Strategies for Starting and Sustaining
School-Industry Partnerships*



a FLATE Best Practices Guide

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A Network of Sustainable Partnerships

FLATE, the Florida Advanced Technological Education Regional Center of Excellence, was established by the National Science Foundation (NSF) in 2004 to help develop a skilled and qualified workforce for Florida's manufacturers. FLATE builds the pipeline of future workers for Florida's advanced manufacturing sector using a comprehensive, three pronged approach: curriculum reform, outreach, and professional development. FLATE's vision and mission are grounded in collaborative partnerships. In 2011, Florida industry expressed the need for partnerships with schools to develop a pipeline of STEM (science, technology, engineering, math)-educated employees, and schools have expressed a strong desire for this partnership, but both entities have had a slow start forging ahead to make these partnerships happen.

Industry and educational institutions can engage in a variety of partnerships and activities as outlined in this new guide, produced in partnership with the Manufacturers Association of Florida's Center for Advanced Manufacturing Excellence (CAME). Often partnerships begin with a single, regular involvement in an outreach activity and increase as interest in that activity grows and expands to others. Although partnerships may start with a single person in a school and a single person in the company, it is imperative that this expands to involve more stakeholders in each. In the school, this could be a program director (CTE director and/or principal). At the company, the group might include human resources, media and outreach/community involvement personnel as well as plant or operations managers, engineers and/or technicians. Strong, lasting partnerships involve relationships and relationships involve people.

FLATE's goal in this activity is to build a network of sustainable partnerships. In this new guide, we share lessons learned and best practices to create successful and sustainable school-industry partnerships. We offer a "laundry list" of possibilities that schools and industry can mix and match to create strong partnerships that result in "win-win" scenarios for both. We also offer tips for talking with students about aspects of manufacturing that young people can relate to and are even passionate about. The partnerships will have many common and fundamental threads, but they won't look alike and shouldn't! Let FLATE help you get started on your partnership adventure to grow a strong and engaging educational pathway for manufacturing careers. Please do not hesitate to send us *your* stories; we would love to celebrate and share them.

Finally, providing the correct image of manufacturing is imperative. Many still see the manufacturing industry as merely assembly lines of workers manually processing widgets all day. Educating and informing students (and parents) about the world of modern manufacturing and the opportunities available in the field is essential. Too many young people are disregarding manufacturing as a career, unaware of the career growth and wage potential. However, the image will not change unless you, the manufacturers change it. FLATE can help, but your involvement is vital.

Please contact us if we can answer any questions about this material, or help facilitate a connection or partnership. In addition, learn more about FLATE and our MSSC aligned ET Degree program at www.fl-ate.org, and see how our "Made in Florida" outreach campaign can help you make the connection at www.madeinflorida.org.

Sincerely,



Marilyn Barger, Ph. D., P.E., CPT

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I. School and Industry Partnership “Tools”

Find industry/school district, school or college models that you can “borrow” and/or adapt to work for your own school/industry partnership. Partnerships can include a variety of interactions between the two organizations by engaging many people in various work areas at both institutions. This includes teachers, career counselors, educational administrators, human resource professionals, engineers, plant managers, and training personnel.

Some of the shared activities will be formal and others will not. The list below represents interactions/activities that might be part of an exemplary, well-established partnership between a school and a company in Florida, or anywhere across the country. Several items have been grouped together to both simplify the list and show that these activities may be called different names.

- Scholarships/Tuition Assistance/Reimbursement
- Internships/Externships/Work Experience
- Student/Faculty Mentoring
- Advisory Board Participation/Curriculum Development Help
- Industry Demo Projects/Facility Loan
- Funding/Access to Equipment
- Adjunct Faculty/On-site Courses
- Tours and Talks

A strong and sustainable partnership is not only broad (includes a mix of interactions), but should also be deep, involving people from different parts of both organizations. Some might refer to this as “adopt a school” or “manufacturing mentors”.

Scholarships/Tuition Assistance/Reimbursement

Scholarships provide students without financial resources with support and opportunities to pursue a career in the manufacturing industry through further education. Local companies/professional organizations often have scholarships for local high school graduates that serve as a great way to “hook” local talent and future workforce. Tuition assistance is often available only to current company employees and links them directly to education programs relevant to their industry. This allows incumbent workers to enjoy the benefits of advancing their education through academic degree programs endorsed by the company.

Internships/Externships/Work Experience

Internships are supervised learning experiences with a defined beginning and end, and with clearly defined learning objectives and goals. They are designed to be an extension of the classroom, allowing interns to apply their knowledge in a “real-life” setting. They provide students with great hands-on exposure to future employers and educate them about pathways to employment in manufacturing companies. Internships can be part of technical high school or college level programs. For college, internships are often “credit-bearing” requirements for completion of technical programs and therefore

require formal documentation of attendance and learning outcomes. In many cases internships are paid, but they do not have to be. For companies, interns provide a way for them to get an idea of what students are learning in educational programs. Internships can then give companies the opportunity to work with schools to “mold” curriculum so that it is relevant to industry and provides students with workforce skills and knowledge. Internships also allow companies to preview potential employees, and get needed help for special projects or particular tasks.

Externships are experiential learning opportunities, similar to internships, but generally not part of an academic program of study. They typically provide paid, summer employment for a few days to several weeks, giving participants a short, practical experience in their field of study/potential career field. Externs will get a real-life perspective of the current industry workplace and trends in careers. Practicing teachers can do an industry externship in a manufacturing company during the summer to gain deeper knowledge and understanding of their teaching field and how it translates into skills their students will need to excel in manufacturing careers. Externships may also provide faculty with opportunities to explore new content areas for curricula development, and/or student workforce readiness and career preparation. They are great vehicles to give teachers real-world experience that they can bring to students and also give companies extra help during summer months.



Student/Faculty Mentoring

This high intensity, long-term, one-on-one strategy is very effective in preparing students for any workforce. Mentors are important for students (especially girls, women and minorities in non-traditional career paths) and faculty participating in, or pursuing STEM careers. For manufacturing, with its negative image, mentoring can make a huge difference for students gaining knowledge about the field, dispelling myths, as well as developing self-confidence. Mentoring can be one-to-one or can be formalized through a class, teacher or school. Institutions can tap into online mentoring programs that virtually connect industry professionals to students (e.g., www.mentorNet.org).

Advisory Board Participation/Curriculum Development Help

Every technical, career or occupational school program should be driven by an active Industry Advisory Board. Industry's participation in advisory boards or committees is valuable in assisting educators to design, implement and evaluate programs. Through these committees, industry partners, with their experience and expertise, help tailor curricula to current industry needs and infuse specialized skills set beyond the traditional curriculum. Industry partners can request new topics like emerging technologies or more background practice in fundamental skills. Frequently a team of industry experts might provide content material to educators who develop lessons and learning activities. Industry would then review the newly developed material before it is used in classrooms.

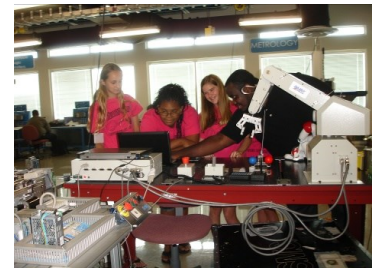
Additionally, an industry partner might teach new topics as a guest lecturer. Although curriculum may be a focal point of Industry Advisory Boards and committees, members are called on to participate in recruitment events, host plant tours, arrange student work experience and other activities. Advisory board participation provides opportunities for industry members, educators and students to build strong, sustainable and powerful partnerships to support and increase student success.

Industry Demo Projects/Facility Loan

Industry demonstration projects offer opportunities to involve students in the world of modern manufacturing in a hands-on, real-life context. Bring the students to a facility and solve a real-world problem with them. By opening up their manufacturing facilities either for tours, camps or workshops, manufacturing industry partners can provide schools with the opportunity for on-site learning, allowing students to be fully immersed in the manufacturing world.

Funding/Access to Equipment

Industry partners can provide financial assistance and/or equipment to schools that teachers and students would otherwise be unable to utilize. Technical schools just don't have the fiscal capability to stay abreast of the continuously evolving and changing technology now found in manufacturing facilities. Through funding and making equipment available to schools via donations, industry can provide students with the opportunity to familiarize themselves with the high tech machinery necessary for many manufacturing careers. By also teaching a couple of sessions on the equipment, industry partners can ensure that students get the basic training and experience they need for a good start in a new job. This could be accomplished on-site, at a training facility, or at the school.



Adjunct Faculty/On-site Courses

Industry experts possess current, specialized knowledge and skills which make them invaluable assets as adjunct faculty members for many college technical programs. Students connect well with instructors who have hands-on, grass roots experience in their subject area. One bonus for adjunct faculty instructors is that they get to really know potential candidates for their own workforce during the extended period of the course. Holding classes on-site at an industry partner's manufacturing facility can also provide opportunities to expose students to the exciting world of manufacturing.

Tours and Talks

A national poll of teenagers conducted by Nuts, Bolts & Thingamajigs (NBT) and the Foundation of the Fabricators and Manufacturers Association (FMA) revealed that 61 percent of teens have never set foot in a factory or other type of manufacturing facility. This is unfortunate as industry tours have proven to be a very effective way to expose students to manufacturing. Tours also emphasize the importance of STEM and its connections to manufacturing. Industry guest speakers in school are also very valuable in addition or as an alternative to tours (if tour logistics cannot be worked out).

Tours: Value-added Experience

Face-to-face experiences provide students with a chance to see the application of STEM subjects come to life in a high tech world. Modern manufacturing industry tours can be especially important for high school students, where they have the opportunity to see, hear, and learn about different jobs and careers that people have in high-tech industries. For high school students, plant tours have the potential to provide a “spark” to set off a future high tech career and give them a point of contact for summer jobs and internships. Industry employers hosting the tour

have the chance to make a connection not only with the teacher and students, but with the touring school for recruiting, job shadowing and externship opportunities.



Showcasing Florida Career Opportunities

- What kinds of jobs?
- How much do they pay?
- Where are they located?
- What skills are needed?

Industry partners are in the best position to answer the questions that today’s students (and parents) want answered. Dispelling the myth that manufacturing jobs are “dirty,” monotonous and unfulfilling is of paramount importance. Industry partners are key to achieving this goal and providing a “real” picture of the high wages and exciting careers that modern manufacturing offers.

Virtual tours are a great way to prepare a class before a real tour, review after a tour, or serve as an alternative when a tour isn’t possible. There are many virtual tours available online on some company websites, or collected together on a number of outreach websites including FLATE’s “Made in Florida” site: www.madeinflorida.org. FLATE’s Industry Tours Best Practices guide is another invaluable resource for both instructors taking tours, and industry professionals hosting student tours in their facilities. This guide is available online at www.fl-ate.org as a virtual flip book, or in a print-ready format.

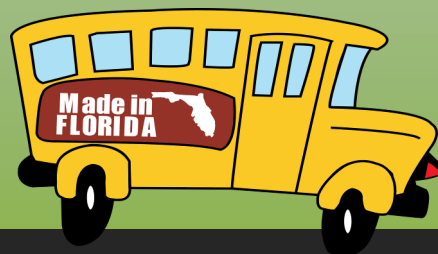


TIPS for Tours and Talks

- Give a preview tour to the educator/chaperone if possible before the student tour
- Find out what kind of class/course will be visiting and what age
- Remember “tabula rasa” - they know little about what you take for granted
- Outline both your introductory remarks as well as tour highlights
- Develop a list of questions (possibly with the teacher) to ask students during the tour
- Talk about the processes as well as the flow
- Have something they can touch and/or hold, or a hands-on demonstration
- Talk about careers and technical jobs in the plant
- Talk about the importance/relevance of education
- “Give aways” for students and/or educators are great (could be different)
- Give students an “assignment” - something to research, etc.
- Follow up with the educators afterwards to see if there are more questions
- Consider what you would do differently the next time

FLATE’s Tour Resource Site:

www.flate.pbwiki.com



II. School and Industry Partnership “Tips”

Successful partnerships begin with mutual respect and an education process on both sides. All stakeholders in the partner school must know what the manufacturing industry is really like. By contrast, the manufacturer has to know what the school needs, how the students, teachers and administrators think, and how schools “work”. Collectively, both entities must make sure that the old stereotypes of dirty, hot work conditions and monotonous, mindless, back-breaking conditions are removed. The previous sections provide partnership ideas and opportunities. This section addresses how these misconceptions can be erased and replaced with positive, proactive actions.

Targeting Advanced Manufacturing’s Softer Side

Advanced manufacturing as a “green” profession

Advanced manufacturing as a helping profession

Advanced manufacturing as a creative profession

Advanced manufacturing as a “hands-on” profession

Advanced manufacturing as a high tech profession

Advanced manufacturing as a lucrative career

Targeting Girls and Young Women

Targeting the Future Workforce (K-12)

Targeting Parents

Targeting the School’s Community

Educating about Manufacturing in Florida: Manu-Facts

FLATE’s “*Made in Florida*” online resource provides many avenues for you to explore these lines of thought with students. It showcases manufactured items and companies. It also highlights career pathway resources that will help industry and educators make the point that manufacturing plays a big role in improving our quality of life, and that the manufacturing industry provides high tech and creative professions. In addition, it draws attention to the fact that there are great career pathways for students to become involved in this profession.

Targeting Advanced Manufacturing’s Softer Side

Manufacturers have characteristics that students, teachers, and school administrators need to know about. Students will find modern manufacturing practices amazing and a world away from their current I-Pod view of high technology. Showcasing your hard core manufacturing processes either in their classrooms or in your plant will make a long-term, “gee whiz” impression on them. Discussing your technology will certainly broaden students’ perspective of what manufacturing is all about. To appeal to a wider audience, consider bringing the softer sides of your operations to their attention. Some of these characteristics are outlined here and represent great talking points for your company, as well as avenues to build partnerships with a school and its students.

Advanced manufacturing as a “green” profession

It is easy to bring sustainability into conversations about modern manufacturing. Unfortunately, the fact that manufacturing is a “green” industry is news to students. Discussing the “green” aspects of manufacturing may trigger school partnership projects, while highlighting this softer side of manufacturing. Discussion topics include:

Waste Reduction: Emphasize to students that manufacturers approach waste reduction with a “lean production” approach. This approach reduces waste streams as well as total manufacturing costs. Facility recycling programs reuse materials and lower the burden on landfills.

Energy Efficiency: Minimizing energy use as a way to reduce costs is a common practice for Florida manufacturers. Introducing students to the challenges of this task will increase their respect for manufacturing as well as connect technical careers to the greening process. Energy efficiency includes both the building envelope (insulation, shade, closures, etc.), and the inside where production equipment consumes a considerable amount of power. Both aspects are important to manufacturing facilities. Combined with recycling and other sustainability efforts, energy efficiency supports LEED building recognition for industry as it does for educational institutions.



HCC Southshore Campus is LEED Gold certified

Advanced manufacturing as a helping profession

Part of the paradigm shift needed to promote manufacturing/school partnerships includes taking a closer look at manufacturing as a helping profession. Raising awareness that manufacturing is also a helping industry is particularly important when recruiting women and girls to advanced manufacturing careers. Discussing the fact that manufacturing includes the development and production of health aids, bionics, medical and safety devices and surgical robots, as well as many other products to help people lead safe, productive lives, is important to students focused on social responsibility. Highlight the fact that manufacturing companies continuously improve their products to make them safer, easier to use, less costly and more durable.

Advanced manufacturing as a creative profession

Creativity and artistic ability are other aspects of manufacturing that you can use when talking to students about the industry. Young people are full of fresh, new ideas and want to express them. Manufacturers can emphasize the many creative aspects of initial product design and development, production processes, and post-production packaging, marketing and sales.

Relating manufacturing activities to creative thinking will be news to students. Point out the fact that manufacturing careers include ample opportunities to work on product improvement, resulting in products that are safer, more environmentally “friendly” and better matched to their intended function. Other career options also include identifying and testing the most durable, strongest, safest and most environmentally friendly materials for products. Remind students that problem-solving and critical thinking skills come into play frequently!



Another new message we need to communicate to students is the under-appreciated role that the design process plays in manufacturing. Teachers need to know that creative minds are called for here! Designing successful, innovative and usable products that meet the needs of the customer, is obviously a big part of manufacturing, but that will not be apparent to educators and students. Finally, building a partnership with your local school to promote manufacturing as a career path includes “bragging rights”. Make it a point

to let everyone in your partner school know that careers in manufacturing require dedicated, creative professionals, and that you are proud of your product and the people that make it!

Advanced manufacturing as a “hands-on” profession

Today’s manufacturing industry continues to highly value employees’ ability to work with their hands. For the work in the early decades of the 21st century, the word “hands-on” has a very different meaning than it has in the past. Today there are still many manufacturing jobs that primarily involve skilled, technical, hands-on work, but that work is performed in modern clean, organized, neat, climate-controlled, and well-lit facilities. Additionally, since some, if not all equipment is now partially, or fully-automated (controlled by computers), we have to re-define “hands-on” for manufacturing and high tech industries and re-educate the public accordingly.

One “hands-on” challenge manufacturers needs to address is summarized in a Nuts, Bolts and Thingamajigs (NBT) Poll. The results demonstrated that young people are “non-tinkerers” and 60 percent of the respondents indicated that they avoid major household repairs, preferring instead to hire others to complete them. The poll also reported that 58 percent of respondents had never made or built a toy; and 57 percent indicated that they had average or below average skills at fixing things around the house. The data clearly shows that teens don’t have enough role models to encourage them to repair and build things themselves, nor have they experienced the pride of building or repairing something useful.



Industry partners can support school programs by working with the teacher to develop, and ultimately deliver, a hands-on activity that reflects the company's products or one of its high tech operations. Also popular and always a big hit with students, are brief "show-and-tells", with a product to demonstrate how it is made or tested, or how two components are joined. The students will ask questions and want to touch and try whatever you can bring!

Advanced manufacturing as a high tech profession

A great partnership action is to beat down the dull and dirty stereotypes once and for all. To keep their globally-competitive edge, modern manufacturers use the most advanced and automated equipment available. Technicians program, operate, and maintain robotic systems to perform process and logistics steps. They help develop elaborate control schemes to maintain product quality and material movement for just-in-time manufacturing operations. Students often think the military services develop the most cutting-edge technologies, but it is manufacturers that make those technologies a reality. If students want to work at technology's leading edge, they should work in manufacturing.

Although today's youth live in an electronic world and have some sense of computer programming, directing these students onto a manufacturing career path requires a push that you can provide. They don't realize the huge computing power in manufacturing facilities that connect office computing, cyber security and manufacturing operations together in a common, virtual space. Students that are keenly interested in information technology, will find many opportunities in manufacturing.

Advanced manufacturing as a lucrative career

It goes without saying that high school students don't totally understand the value of money, but they certainly have an appreciation of what a "comfortable" lifestyle is. The partnership effort on this front is straightforward, with the bonus that it is also a wonderful "bragging" opportunity. Manufacturing companies offer good-to-high salaries. Most jobs in manufacturing are considered "high-wage", meaning that they pay significantly above the average worker's salary in all fields. Data supporting this position is available on the "Made in Florida" website. Manufacturers also offer good benefits including medical insurance, retirement plans, and tuition reimbursement for work-related education. Manufacturing companies offer many opportunities to move within the company to other work areas, allowing employees to find a good fit for themselves and the company, as well as the best opportunities for their future advancement. It's important for all of us to help our youth understand that there are good wages and benefits to be had, and, therefore, great lifestyles available in manufacturing at many different positions.

Targeting Girls and Young Women

Mentors are especially important for girls and women participating in, or pursuing STEM careers, and particularly in manufacturing. Girls and women are an untapped resource to fill Florida's manufacturing jobs. In a recent FLATE research study, over 70 percent of interest responses received from high school students were from girls.



Women engineers and technicians can make a big impact on middle and high school girls via in-class and career day presentations and by mentoring students. Industry partners can help meet this need by connecting with school partners. Targeting the softer side of STEM careers like those that require creativity, focus on sustainability and green aspects, or focus on helping people, can be a very effective recruitment technique. Feature young women prominently in

recruitment materials, and seek out opportunities to meet female technicians on the job during plant tours.

Targeting the Future Workforce (K-12)

It is essential to provide youngsters with an accurate picture of the manufacturing world early on, before their image of it becomes “muddled” by misconceptions and other people’s misinformed views of the industry. Starting young is an important component in the partnership arena. It’s important to get kids involved in STEM curriculum at an early age and to keep them interested all the way through high school and beyond.



Manufacturing is a perfect example of a fully integrated STEM business sector. Manufacturing integrates science, technology, engineering and math in most aspects of the company. In research and product development, science and math might dominate. On the production floor, technology and engineering might be the focus. Ultimately, science, technology, engineering and math have to be integrated to get products made efficiently.



Middle school is the typical starting point, but elementary school is not too soon. In either target environment, the most important thing to remember is to deliver an age-appropriate message. A presentation targeted for high school won’t work well with middle or elementary school children. Please navigate to the educator pages of www.madeinflorida.org, to find information and links to FLATE’s Industry-connected curriculum materials.

Robotics competitions are all the rage, and the new “sport” has trickled down from high school to middle and elementary schools using age-appropriate robots. Robots provide a “hook” that gets kids interested in advanced manufacturing and other advanced technologies. Camp and club involvement often leads to robot competitions, but student teams need adult technical advisors and/or mentors. Industry partners can financially support a robotics summer camp, after-school club or competitive robotic team. You can also participate as team technical advisors, or as competition judges. These early experiences foster real interest in STEM education and technical career pathways.



Targeting Parents

Studies show that the #1 influencer on high school students' career choice is...their parents! Therefore, the accurate information connection must not only be made to students, but to their parents as well. Parental buy-in is essential. Often parents just need a chance to learn about the clean, fast-paced and high tech work environments of modern manufacturing. For industry, speaking at a school open house, parent night or a robotic or STEM event provides that chance to educate students and parents about modern manufacturing and the career opportunities currently available. Manufacturers can also encourage teachers to invite parents to join their children on manufacturing tours. This is a very effective way to expose parents to the industry and can really help change any negative perception they have.



Targeting the School's Community

Most people have a limited understanding of what manufacturing encompasses. They are largely unaware of the many varied, high tech, high-wage careers available in the field. Educating the public via schools and other support groups, in general terms, is a great way to begin to change the perception of manufacturing. It's important to send the message to the entire school population, including the school's support infrastructure, that every day they enjoy things they don't realize were made in Florida. The more the public becomes aware that behind every product and technology lies the somewhat hidden world of manufacturing, the more likely their image of manufacturing will change. Finally, don't forget your local school board. School boards are bombarded with requests to respond to perceived important needs. However, manufacturers usually don't focus the message about their workforce education needs to their school boards. Proactive messages to your school board *will* make a difference.



Educating about Manufacturing in Florida: Manu-Facts

The bullets below provide starter Florida manufacturing facts and figures to develop a mini-manufacturing promotion project directed to the school and its community.

- Florida's manufacturing sector is a significant employer that provides high-wage, high value-added jobs and is more stable than most other economic sectors.
- Florida has a strong, skilled manufacturing workforce that represents 5% of the state's workforce.
- There are more than 14,000 manufacturing businesses in Florida.
- About 307,000 people in Florida are employed by manufacturers.
- Florida ranks No. 13 in the nation in manufacturing jobs.
- The average annual salary for a Florida manufacturing employee is \$68,000 or 72% higher than the statewide average private sector wage.
- In 2010, Florida exported \$14 billion of manufactured goods to Free Trade Agreement partner countries.
- Manufactured goods represent 85 to 90% of all Florida exports. Each dollar of manufactured goods creates another \$1.43 of activity in other sectors.
- Manufacturing firms perform approximately 70% of U.S. industry research and development.
- In regional, statewide and national surveys, manufacturers consistently cite a lack of qualified workers as a chief concern and business setback.
- In Florida, small businesses dominate the industry with about 72% of manufacturers employing fewer than 10 people each.
- Five percent of Florida manufacturers employ at least 100 workers.

Sources: Florida Department of Economic Opportunity, Enterprise Florida, Inc., FLATE (Florida Advanced Technological Education Center of Excellence), the Manufacturing Association of Florida, Manufacturing Skill Standards Council, National Association of Manufacturers, Florida TaxWatch Report (2011) Economic Impact Analysis of Florida's Manufacturing.



Valuable Partners for Manufacturing

Manufacturers across the state have called for a one-stop-shop where they can access contact and other information they need. FLATE has this ready for you. Just visit our website, call, or email us. We pride ourselves on expert “Baldrige Sterling” customer service for our stakeholders, and are pleased to answer your questions and help make the special connections you need. We also offer support to help you develop and implement MSSC-aligned educational programs as well as outreach models. FLATE has the resources, knowledge, skills, and ability to weave together our award winning “Synergy in the Sunshine State.”

Opportunities for help abound in Florida. We are fortunate to have partners with the insight and expertise to strengthen and build Florida’s ready-to-work education system and who are ready and willing to help. The following list provides information and websites where you can learn more about these useful and varied resources.

Association of Florida Colleges (AFC)

<http://www.myafchome.org/>

FLATE is active in AFC’s Occupational and Workforce Commission. Participation in AFC provides opportunities for FLATE to focus and share outreach and college recruitment within the occupational and workforce context of Florida Colleges. AFC hosts several meetings each year and provides an excellent opportunity to meet like-minded colleagues and vendors, attend relevant workshops, and learn from Exemplary Practice presentations.

Florida Association for Career and Technical Education (FACTE)

<http://www.facte.org/>

FACTE is a non-profit organization committed to the development of education that will prepare both young and adult Floridians for successful careers. *FACTE*’s role is one of leadership and support for CTE teachers, administrators, and students by working towards the growth of CTE students, staff, materials, information, communication and funding. The organization facilitates professional leadership and partnerships essential for the successful preparation of individuals to participate in a world class workforce. *FACTE* also encourages the development of local associations to promote advocacy and professional development for career and technical education.

Florida Career Pathways Network (FCPN)

<http://www.ftpn.org/>

FCPN is a membership organization for educators and employers involved in the advancement of Career Pathways, Tech Prep, and related education reform initiatives. FCPN is Florida’s leading career pathways organization and serves as a network where members share and discover best practices for secondary, post-secondary, adult education, and military career pathways. It provides an avenue to middle and high school manufacturing programs, focusing on the pathway from middle school to college. FLATE is a member of the FCPN Board.

Manufacturers Association of Florida (MAF)

<http://www.mafmfg.com/>

MAF advocates for the collective needs of Florida manufacturers. MAF and its partner industries, together with FLATE, sponsored the *FL Trend NEXT* six year outreach adverteorial campaign to reach high school students with the message of manufacturing careers. FLATE research noted that this campaign was difficult to tie back to enrollment and hiring results, and looks forward to new joint outreach initiatives. The MAF also hosts FLATE's educators' awards ceremony at their annual summit banquet. FLATE is a non-voting member of the MAF Board of Directors.

MAF's Center for Advanced Manufacturing Excellence (CAME)

<http://www.mafmfg.com/>

The MAF Center for Advanced Manufacturing Excellence, Inc. is a 501c3 organization involved in training and educating students and the public about manufacturing skills and careers. CAME is also the home of the Dream It Do It campaign in Florida.

Manufacturing Extension Partnership (FLMEP)

<http://www.flordamep.org/>

The Florida Manufacturing Extension Partnership is an affiliate of [NIST's Hollings Manufacturing Extension Partnership \(MEP\)](#), a national network of 59 centers that provide assistance to small and midsize manufacturers with the common goal of strengthening the global competitiveness of U.S. manufacturers. MEP has partnership agreements with several organizations in order to reach a wider audience and provide a unique array of services to manufacturing companies in Florida. FLMEP is starting to enter the world of educational outreach at different levels across Florida.

National Association of Manufacturers (NAM)

<http://www.nam.org/>

NAM is the nation's largest industrial trade association, representing small and large manufacturers in every industrial sector and in all 50 states. Developed by NAM, the goal of the Dream It Do It campaign is to help young adults find careers that they can be passionate about in one of manufacturing's many exciting sectors. NAM provides a national lens through which to view Florida manufacturing-related activities, providing a valuable outside perspective.

The Manufacturing Institute

<http://www.themanufacturinginstitute.org/>

Jennifer McNelly, president of The Manufacturing Institute, the non-profit affiliate of the National Association of Manufacturers (NAM), drives an agenda focused on improving and expanding manufacturing in the United States through education, innovation, and research. The institute leadership is a member of FLATE's National Visiting Committee and FLATE serves on the Education Council of the Manufacturing Institute. The two organizations share expertise and collaborate on projects with similar goals. The Manufacturing Institute has resources for a variety of education and credentialing initiatives.

Regional Manufacturing Associations (RMAs)

Large and small industries are wise to take advantage of these valuable partners in their local area. Representatives attend FLATE's ET Forums, serve on FLATE industry and ET degree advisory committees, are active in forging partnerships with local schools for tours, presentations, and outreach activities that help develop a positive image of manufacturing. FLATE supports RMA outreach efforts, and provided each RMA with a complete outreach packet of print and virtual resources in 2012.

STEMflorida

<http://www.stemflorida.net/>

In June 2009, Workforce Florida and Enterprise Florida announced plans to create a statewide council to strengthen the Science, Technology, Engineering, and Math (STEM) skills of Florida's students as a way to address the increasing demand for jobs requiring strong foundations in these areas. *STEMflorida* offers a resource-dense website and promotes STEM education statewide. FLATE participates in *STEMflorida* initiatives and FLATE's industry-connected curriculum won *STEMflorida*'s 2011 Best Practice Award for Excellence Integrating Needs of STEM-Enabled Programs into Engaging Curriculum and Educational Outreach Resources.

Workforce Florida

<http://www.workforceflorida.com/>

Workforce Florida is the statewide, business-led workforce policy board charged with overseeing the state's workforce system. It develops strategies and resources to help Floridians enter and advance in the workforce while supporting economic development and the state's business climate. Critical to their work is ensuring that Florida is preparing for, and responding to, current and future talent needs. Workforce Florida representatives serve on FLATE's National Visiting Committee, and help FLATE target workforce data that supports our mission to enhance tomorrow's workforce talent needs.

Vendors as Partners

"Relevant, practical, hands-on, real-life lessons" are what manufacturers repeatedly say is what they are looking for from the classroom experience. FLATE maintains a close relationship with vendors of technical education and industrial equipment, software packages, books and other resources. Bringing vendors "into the loop" is another effective way to give students a "big picture" of the manufacturing industry.

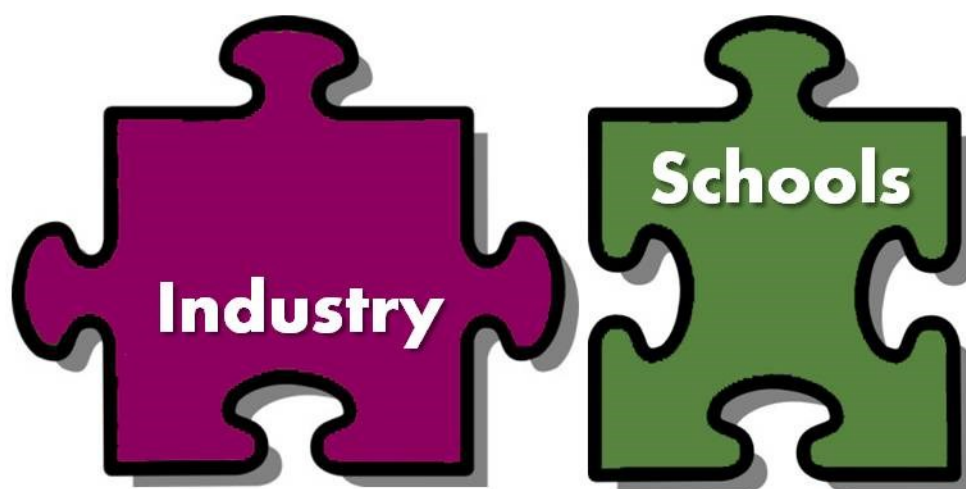


In Closing...

It is important to raise awareness of the many high-skilled manufacturing jobs that remain unfilled due to lack of qualified candidates. The need to fill these high tech, high-wage jobs with well qualified, credentialed candidates is urgent. FLATE's goal, and that of the National Science Foundation's (NSF) investment in FLATE, is not only to help meet current workforce needs, but also to develop and implement long-term, sustainable strategies for building and maintaining attractive, relevant, strong, and flexible career pathways to support Florida's manufacturers. Clearly manufacturing has an "image problem" and changing the face of manufacturing and exposing students to the many good jobs waiting to be filled is extremely important. School and industry partnerships are the key to making this a reality.

FLATE's mission, as Florida's go-to organization for high tech manufacturing and advanced technical education, is to provide leadership, best practices, and resources supporting Florida's high-performance skilled workforce. Tangible results are not possible without the energy and forward thinking perspectives of its partners.

Partnerships between educators and the manufacturing industry ensure the relevancy of educational programs. Through partnerships, students are connected to industry role models so they can gain an accurate understanding of the manufacturing industry and see that there is an eventual return on their investment of time and effort at school. Working together, school and industry partners can create a win-win situation, providing authentic, well integrated connections to the world of manufacturing, and attracting workers already equipped with the skills and knowledge that will ensure their success in the manufacturing workplace.



Appendices

School/Industry Partnerships Grid

FLATE is working with the MAF Center for Manufacturing Excellence to “catalog” manufacturing/school partnerships in Florida. Here is the basic grid we will use to showcase partnerships noting the kinds of interactions between the partners. The shaded columns are only applicable to colleges. For illustration, the abbreviated grid has been completed for existing partnerships at the secondary school and college levels. The idea is to reinforce a line from our introduction—that no two partnerships are the same. What works for one partnership might not work for another. You are encouraged to try activities that you think will work for you and your partners. Talk to your colleagues to see what works for them. All are good, all are important; and all are about building relationships.

| SCHOOL/ INDUSTRY PARTNERS | Scholarships | Tuition Assistance/ Reimbursement | Internships/Work Experience (students) | Externships (faculty) | Student/Faculty Mentoring | Advisory Board Participation | Industry Demo Projects/Facility Loan | Funding/Equipment Access | On site courses | Adjunct Instructors | Classroom Talks | Industry Tours |
|---|--------------|--------------------------------------|---|-----------------------|------------------------------|---------------------------------|---|-----------------------------|-----------------|---------------------|-----------------|----------------|
| Brevard Community College & Harris Corp. | X | X | X | X | X | X | X | X | X | X | X | X |
| Peterson High School & BAE Systems | NA | NA | X | X | X | X | X | In kind | NA | NA | X | X |
| Greco Middle School & Ardaman & Associates, Inc. | NA | NA | | | X | X | X | | NA | NA | X | X |

Highlighting Florida's Comprehensive College Options

Great Jobs and Lifestyles Right Here!

Today's high tech manufacturing positions usually require at least an Associate of Science degree. The FLATE-developed Engineering Technology (ET) degree program is available at 14 (and counting) colleges statewide. This flexible program has a built-in value-added benefit which employers have indicated is important: the ET degree core technical courses are fully aligned with the Manufacturers Skills Standard Certification (MSSC) Certified Production Technician (CPT) - www.msscusa.org.

In addition, high schools may wish to bring their tech programs into the future by offering the Automation and Production Technician program, where students have the option of becoming MSSC certified and earning 15 college credit hours towards the ET core. A number of other technical programs like welding, electronics, or engineering technology also articulate to the A.S. ET, but with fewer credits.

Other Florida technical high school programs are also aligned to the MSSC CPT credential, and it only takes the credential to articulate credit to the Engineering Technology A.S. degree. MSSC certified students have many options. Their industry-endorsed MSSC skills allow them to compete for good jobs which may offer tuition reimbursement to not only complete a college program, but grow as an employee. ET students have options to continue on to a B.S. degree in Engineering Technology in Daytona State College's online program, and other degree programs around Florida. Other articulations are also available on a case-by-case basis. Developing Bachelor degree and other post-secondary options and articulations is one of FLATE's initiatives.

Engineering Technology Pathways supporting Manufacturing



“Made In Florida” Website and Wiki Postcards

FLATE postcards are available as handouts.
To request, please contact FLATE.

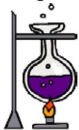


FLATE's wiki

...full of great FREE RESOURCES for you!

MIF Lesson Plans are materials designed to enrich

- Science
- Technology
- Engineering &
- Mathematics



These **FREE** instructional resources provide your students with real world scenarios straight from Florida's manufacturers.

Teachers! Engage your students & make STEM subjects relevant & FUN!
Go to...

<http://madeinflorida.org/educators/>



Teaching Materials Include...

- | Teachers | Students |
|---|----------------------------------|
| • Lesson plan | • Student Worksheet |
| • Reference sheet | • Handouts needed for the lesson |
| • Answer sheet | |
| • Grading rubric | |
| • Company Fact Sheet | |
| • Presentation or Video ("If applicable") | |



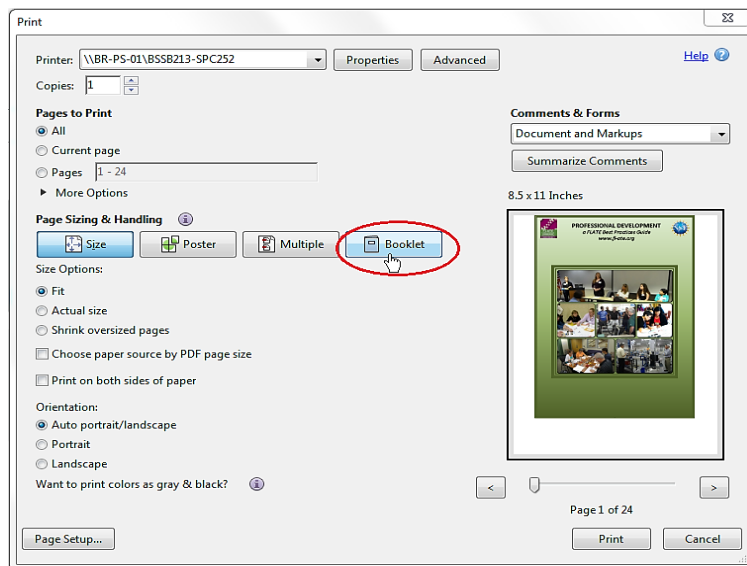
How to Print this Guide

If you would like to print your guide in a “booklet” format (from the original pdf file), please use the following steps. You will need a printer that can print double-sided documents:

Step 1 – select Booklet under Page Sizing and Handling (please make sure you are using a printer that prints double sided documents).

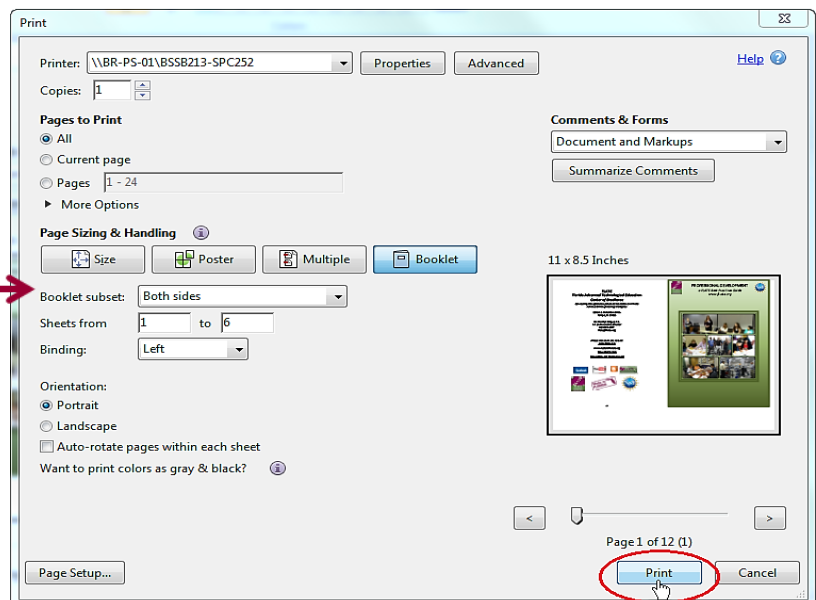
Step 2 – make sure Booklet subset is for Both sides

Step 3 – select Print



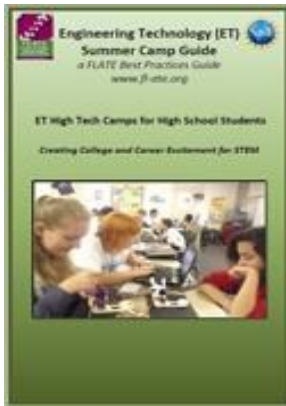
Select Booklet

Before selecting Print, make sure that the Booklet subset is for Both Sides.



FLATE Best Practice Guides

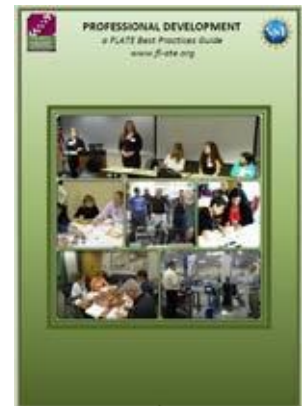
All FLATE Best Practices Guides are available as online resources, or for download at <http://fl-ate.org/best-practices/>



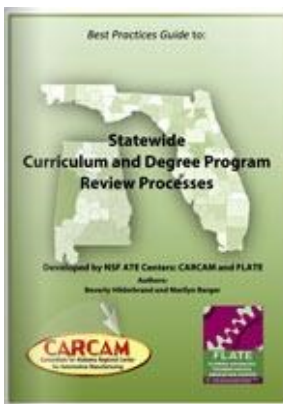
ET High-Tech Camps for High School Students



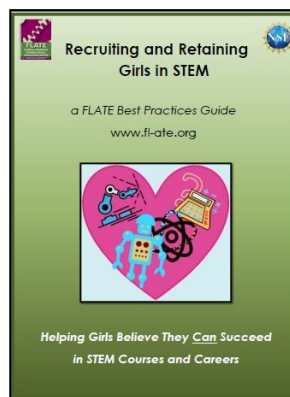
Curriculum Alignment to Credentials



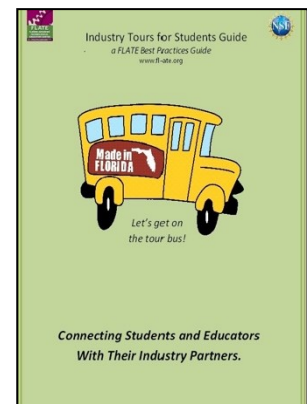
Professional Development



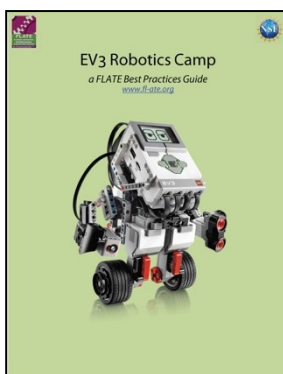
Curriculum Review Processes



Recruiting and Retraining Girls in STEM



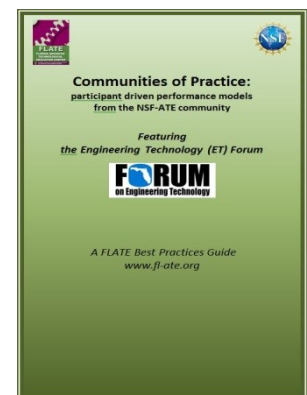
Industry Tours for Students Guide



Robotics Camp Best Practice Guide



FLATE Communication Programs



Communities of Best Practice Guide

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