

Manufacturing Outreach Programs Inspire Future Workforce

There continues to be a high demand for skilled workers in the advanced manufacturing sector. Despite the rewarding and technology-driven careers that are available, many students simply don't know that such opportunities exist. This makes it even more important for educators and industry partners to align their outreach initiatives to increase awareness and generate excitement about advanced manufacturing through Science, Technology, Engineering and Math (STEM) education programs.

Students, especially in younger grades, are often asked by their teachers, family and friends what career they want to have when they grow up. The answers always vary and advanced manufacturing is not typically the top response. But why not?

There could be a few reasons for this – students might not really understand what careers opportunities are available, or they have a perception that manufacturing is a dirty job or maybe they question how their math and science lesson is actually going to help them later in life.

However, manufacturing companies view these scenarios as a valuable opportunity to increase awareness and interest among the younger generations. Several of their important outreach initiatives have an emphasis on STEM-related programs to engage students and spark interest in advanced manufacturing.

Often times, companies will partner with local school districts or community/technical colleges to assist with these outreach initiatives. For instance, Joliet Junior College has been able to offer innovative, STEM programs for the community through various grant opportunities and generous contributions from companies such as: CITGO Petroleum Corporation and Exelon.

CITGO Petroleum Corporation

Over the years, JJC has been able to offer programs through its STEM Academy. One of the core programs is Technology Camp where students in grades 6 to 8 have the opportunity learn about various career pathways in a hands-on environment. Students learn technical areas such as: automotive, architecture, engineering & construction, 3D printing, computer aided design and drafting, electrical, industrial maintenance technology, manufacturing, orthotics & prosthetics technology, robotics and welding. JJC, in partnership with CITGO, also developed a variety of activity guides highlighting the importance of STEM to various age groups ranging from kindergarten through junior high school.

The focus for high school students was through the design of a unique career pathways brochure. The piece provided occupations available at CITGO, and shared the education required in order to obtain those positions. In addition to the various promotion items developed to educate individuals on STEM, CITGO is also an active participant in the annual MFG Day event for high school students. This event brings together manufacturing and education. Manufacturers share the different career opportunities available within their facility, and then highlight the partnership they have with education to guide students on the appropriate career pathway.

CITGO is dedicated to developing future industry leaders; therefore, the company is actively involved in the advancement of STEM education. According to Dennis Willig, vice president and general manager of the CITGO Lemont Refinery, "Whether CITGO is sharing STEM through a camp, academy or career pathway discussion, the goal is to be a part of increasing STEM capabilities in students of all ages."

Exelon

Another exciting partnership that JJC has is with Exelon to provide additional STEM opportunities to the community. The Girls Leading the Charge program is funded through a grant from Constellation, an Exelon company. These programs have an emphasis on educating middle school aged girls in the technology and engineering skills. For the past four years, girls in grades 6 to 8 have been able to learn about solar power energy and engineering. This STEM-focused program progresses in three levels that increase in project scope and difficulty. Girls explore concepts in alternative energy, including solar/photovoltaic (PV) cells and participate in hands-on activities to apply design and troubleshoot techniques used by engineers. The program includes an opportunity to work with various solar powered models, Hydrocar Fuel Cell model cars and 3D printing.

Successful outcomes from the program are that the girls learned about basic physics principles, mechanics, and solar energy. Additionally, the girls developed critical thinking and problem-solving skills. In the classes, the girls were encouraged to design their own car, and they were required to troubleshoot if their design did not work. In the end, the girls presented their design, and shared what they learned through the design, building and testing process. The girls had the opportunity to compete after their presentation to see who built the best design. It was educational, and at the same time, it was fun.

Opportunities like these are available when companies such as Exelon invest in their community and the future workforce's education. The true testament comes when you receive feedback from the parents of the girls. One example of this feedback was from a parent, "This is the first camp/class of this sort we have done at JJC, and my daughter and her friend loved it! It far surpassed what I would have expected, I'm a high school teacher and I have super high expectations! When I saw the girls made solar powered robots, I was blown away. Both girls are still talking about how they made the robots, and remote cars and skateboard. It's so, so, so awesome to get them involved in STEM."

When students are introduced to these types of STEM programs at an earlier age, they are aware of the opportunities that are available as they progress through their educational journey and into the workforce. Exelon is also a proud sponsor and partner of JJC's Operations Engineering and Technician (OET) Program. This program champions the development of Operations Engineers and Operations Technicians, while also connecting local talent to good paying jobs in the Joliet area.

Students in JJC's OET program earn an Associate of Applied Arts degree while training for a career in petrochemical, nuclear or manufacturing industry. The program focuses on a hands-on learning environment where students also complete a summer internship as part of the program.

"We admire the commitment Joliet Junior College makes to shaping and growing the individuals entering the industrial workforce," Dresden Station Communications Manager Sara Peters said. "We're pleased to say that our local nuclear plants have benefitted from hiring several graduates of the OET program and the knowledge and skills they've brought to their jobs from day one."

Impact of Outreach Initiatives

These innovative outreach programs are more outstanding examples of the commitment from manufacturing companies to give back to the communities in which they serve. Amy Murphy, dean, applied arts, workforce education & training at JJC said, “We’re extremely fortunate to have manufacturing companies such as CITGO and Exelon in our area who recognize the importance of this outreach initiative.” She added, “Through these partnerships, we’ve been able to provide innovative programs and events for students in elementary, junior high and high school students so we can collectively inspire our future workforce.”

For more information about Joliet Junior College’s STEM programs, visit www.trainingupdate.org.

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Photos and captions are below

CITGO Petroleum Corporation participates in a variety of STEM outreach initiatives in the local community. **(Photo: CITGO1-web)** Students in grades 6-8 have the opportunity to participate in hands-on, STEM activities through Joliet Junior College’s Technology Camp. **(CITGO2-web)** – CITGO participates in the annual MFG Day event for high school students to share career pathways that are available. **(CITGO3-web)** - Students have the opportunity to learn about STEM through a variety of hands-on programs and events.

(Photo: Exelon1-web) **(Photo: Exelon1-web)** Girls in grades 6-8 have the opportunity to participate in hands-on, STEM activities through Joliet Junior College’s Girls Leading the Charge program as part of a grant funded by Constellation, an Exelon company. This STEM program is another outreach initiative that increases interest and engagement among students.