



BUILDING 21st CENTURY MANUFACTURING TALENT

A Resource for Career Counseling: Engaging Students in Educational Pathways to Careers in Modern Manufacturing

An Education & Workforce Development Initiative
for LIFT...Lightweight Innovations for Tomorrow



THE PROBLEM

The U.S. manufacturing industry faces an increasing shortage of available high-skilled technology-savvy workers. Demand for workers in STEM-related fields is expected to grow 17 percent by 2018, while the number of college graduates in those fields continues to decline. For example, in 2009, just 18 percent of bachelor's degrees awarded were in STEM fields, down from 24 percent two decades ago.

While we are beginning to increase the number of college graduates in STEM fields, the gender and racial gap within the STEM workforce continues to widen. While women comprise 49% of the college-educated workforce, only 14% of engineers are women and just 27% are working in computer science and math positions. Similar disparities exist for Hispanic and African American workers, who account for only six percent of STEM workers.

As reported in the Ohio Quarterly LIFT Report for the fourth quarter of 2016, employers in Ohio posted nearly 20,000 jobs related to lightweighting. The employment growth of lightweighting-related advanced manufacturing jobs in Ohio has gone from 651,800 jobs in 2010 to over 735,000 in 2016, a nearly 13% increase, demonstrating the growing demand for Ohio workers with lightweight manufacturing-related skills and knowledge.

With employer demand on the rise and supply of students on the decline, the manufacturing skills gap is continuing to widen and needs to be addressed with demand-driven, results-oriented solutions.

THE SOLUTION

LIFT, Battelle Education, Thinking Media and Edge Factor are developing a program to guide students towards lightweight metals and other advanced manufacturing careers by engaging them in middle and high schools in Ohio.

The program includes two proven systems – Learning Blade and eduFACTOR - that introduce metals and manufacturing careers, show engaging stories about how these careers can provide exciting and meaningful jobs, and offer activities that demonstrate and strengthen the skills needed to pursue these career paths.

Together, these programs will create a coordinated emphasis on advanced metals manufacturing careers from middle school through high school, pointing students toward post-secondary training for high-demand jobs.

PARTNERS

- Battelle for Kids
- Thinking Media
- Edge Factor
- Ohio STEM Learning Network, operated by Battelle Education
- DRMA – Dayton Region Manufacturers Association
- Fastlane MEP
- Various Ohio School Districts

MIDDLE SCHOOL

Learning Blade: LIFT,
Manufacturing and other missions



HIGH SCHOOL

Educator: Lightweighting,
machining and careers



COMMUNITY COLLEGES

Job-specific training

ABOUT THE PROJECT

Learning Blade®, a product of Thinking Media, introduces STEM technologies and career opportunities through an entertaining game-based format. In the web-based system, students pursue engaging missions that solve problems, like helping an injured dolphin or building an orphanage after an earthquake. From an earlier LIFT investment, a metals manufacturing mission, "Lightweight Aircraft," has been developed and implemented as part of the Learning Blade curriculum.

eduFACTOR is a membership-based, online suite of multimedia resources including a TV series, virtual field trip experiences, technology video series, career pathways video series, hands-on CNC and 3D printing projects, interactive STEM activities, CTE success video series and more.

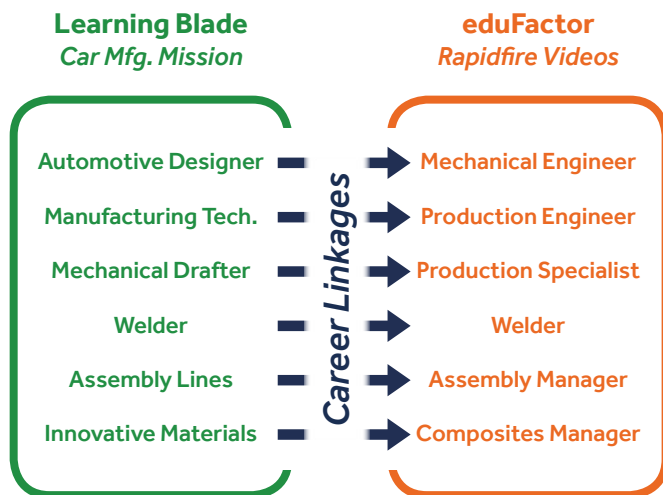
Middle School Engagement:

Students who complete selected units on manufacturing careers in Learning Blade will be directed to video resources and activities on the eduFACTOR platform that provide real-life examples of using these skills in exciting applications.

High School Engagement:

Schools will have access to a library of multimedia tools to inspire their students towards careers in manufacturing and CTE training and make learning concepts relevant in the context of a story. The platform provides teachers with 24/7 access to media, lesson plans, projects and presentations in an easy-to-understand online portal.

Here is an example of how these learning resources make a direct connection between middle and high school activities, using the Learning Blade Car Manufacturing mission and eduFactor's rapid fire videos.



DELIVERABLES

- eduFACTOR will be implemented in up to 50 high schools in Montgomery County, Ohio – including Dayton
- Learning Blade will be implemented in the feeder middle schools for the selected high schools
- Professional development will be available to all participating schools
- Informational sessions will be held to highlight the project in the involved communities

ALIGNMENT TO STRATEGIC FOCUS AREAS



Attracting students and workers to educational pathways and careers in manufacturing



Ensuring students gain STEM foundational skills for success in manufacturing careers



Linking and leveraging resources and related initiatives on the ground today