

Manufacturing the Future Lesson Plan #1

What is Manufacturing in the 21st Century: An Overview

CD time is 7 minutes + 10-15 minutes for discussion

Lesson Objectives:

1. To introduce **manufacturing** in the 21st century.
 - a. “Old” manufacturing conjures up images of back-breaking work in dirty factories; “new” manufacturing is focused on high skills, high wage, and high technology.
2. To increase students’ awareness of careers in manufacturing.

Key Points:

1. The manufacturing marketplace has changed drastically since the Industrial Age.
2. Eleven (11%) of America’s population is employed in manufacturing.
3. One out of five workers in Wisconsin is employed in a manufacturing career; in Northeast Wisconsin 1 in 4 adults is employed in manufacturing.
4. Everything you touch has been manufactured.
5. Manufacturing is very high tech requiring high tech solutions and a highly skilled and qualified work force.
6. The types of jobs in manufacturing and salaries include:
 - Mechanical Engineer: \$65,300 median salary
 - Electrical Engineer: \$74,900 median salary
 - Electrician: \$52,300 median salary
 - Electro-Mechanical Technician: \$43,600 median salary
 - Field Service Technician: \$49,400 median salary
 - Industrial Maintenance Mechanic: \$44,800 median salary
 - Computer Numerical Control Machinist: \$34,460 median salary

Vocabulary: (List of words with definitions to share with students prior to viewing video; ask students to watch and listen for references to these words throughout this segment.)

1. Manufacturing

To make, fabricate or process raw materials into a finished product that meet a customer’s expectations or specifications.

2. Unemployment rate/employment rate

The percentage of the total labor force that is unemployed but actively seeking employment and willing to work.

3. Soft skills

More appropriately called employability or core skills, these interpersonal skills are personal attributes that enhance an individual's interactions, job performance and career prospects. This is often described by using terms often associated with personality traits, such as optimism, common sense, responsibility, a sense of humor and integrity; and abilities that can be practiced (but require the individual to genuinely like other people) such as empathy, teamwork, leadership, communication, good manners and negotiation. It's often said that hard skills will get you an interview but you need soft skills to get (and keep) the job.

4. Technical skills

Specific, teachable abilities; a person's skill set and ability to perform a certain type of task or activity.

5. Global environment

The United States manufacturing companies are competing against products, workers and companies from other countries in selling our own products both nationally and abroad.

Activity and/or Discussion Questions: (Select one activity or 2 discussion questions)

Activity ideas (Pick the activity of interest to your students)

1. Using Skype (or other electronic media) or in-person speaker, invite someone working in manufacturing to talk with the class. Use a Q & A format based on the video clip the students just viewed in class.
2. Break students into teams of 3-5 people. Ask students to complete an internet search using the Alliance's website (www.newmfgalliance.org) and list the manufacturing companies in the city where the school is located. Compare lists.

Discussion Questions (Pick the discussion questions of interest to your students)

1. What classes should you take in school to prepare for a career in manufacturing?
Answer: Math, writing, communications, technical classes in the area that are of interest to the individual.
2. What skills will you need to work in a manufacturing career?
Answer: Both soft and hard skills, including a strong emphasis on math, writing, communication skills, employability skills and strong technology/computer skills.
3. What products does the U.S. manufacture for other countries?
Answer: The USA is the third largest exporter, with \$1.287 trillion worth of goods sold abroad including aircraft, semiconductors, passenger cars, pharmaceuticals, industrial machines, corn, meat and poultry, soybeans, natural gas, mining equipment, telecommunications, plastic materials.

Follow-up for students (and parents):

1. NEW Manufacturing Alliance All Star magazine (direct students to Alliance's website www.newmfgalliance.org for future reference) and/or bookmark
2. Career Cruising
3. WISCareers
4. School counselor
5. PIE/Chamber Industry Tour
6. Job Shadow
7. Youth Apprenticeship
8. Boys & Girls Club
9. After School Programs
10. Technical college in your area

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