

# Manufacturing



## Career Cluster Teacher's Guide

### Resource Description

When you see a car moving down the road, it's easy not to think about all the work that goes into building it into the 3000 pound, technological marvel it really is. The manufacturing industry constructs all the parts necessary to build things like engines, boats, and tools. Individuals in this industry are skilled in operating high-tech machinery used in production. They also need to be able to diagnose and respond to problems with the production process. If you like working with technology and doing something where there is a physical product at the end of the day, then maybe the manufacturing industry is for you!

### Materials and Resources

- Teacher guide
- <http://mygpsforsuccess.com/manufacturing-2/>
- Cluster student viewing guide
- KWL Chart
- Display paper or individual sheets
- Pen/Pencil
- 1:1 computer or laptops; or group students if limited resources

## Vocabulary & Definitions

**Assembly Line**: a type of manufacturing where the product is assembled by a series of operations until completed

**Automation**: a building or assembly process done by machines

**Die-tool**: for cutting out metal

**Fabricate**: To build something

**Forge**: process of refining metal through heating and shaping

**Machinist**: a skilled operator of a machine

**Production**: creating goods for sale

**Technology**: using science to improve the world

**Trouble Shoot**: determining why something isn't working and figuring out ways to fix it

**Welding**: cutting or joining two pieces of metal

## Bell Ringer

1. Have the following displayed on an easel, whiteboard, or individual sheets of paper for students to review and write down:

*Jot- Pair- Share:*

*When you hear the term "Manufacturing" what are some things you think of? Do you have a positive or negative idea about manufacturing? Be prepared to share your response.*

2. Have some students share responses.
3. Point out that there is an enormous variety of careers in this field – identify similarities and differences in responses.
4. Facilitate student discussions about the importance of the Manufacturing Cluster by discussing responses.

## Objectives

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The student will be able to:

- Identify the central aspects of the Manufacturing Career Cluster including career paths, skills & interest, and education level
- Explore different careers within the Cluster
- Analyze what is known, wondered, and learned (KWL) about the career cluster to begin conceptualizing an individual career map

## Anticipatory Set

1. Divide students into pairs – each student gets a KWL Cluster Chart.

### Verbal instructions:

- *Think about what was discussed during the bell ringer regarding Manufacturing careers.*
- *With your partner, list at least 5 items you know about job details, necessary skills, etc. in the “Know” Section.*

2. Have two pairs of students join one-another to form a four-person group

### Verbal instructions:

- *Compare and discuss each list.*
- *With your group, list at least 5 things you want to know about the Manufacturing Cluster in the “Wonder” Section.*

3. Have groups share their new list with the class.

## Introductory Questions

### **Introductory Questions:**

*Ask the following questions to the whole class with for students to write down their answers and/or discuss with a partner. Have 2-3 students share their answers:*

- What are some manufacturing businesses that you know of in the North Country?
- Why is it important to have people working in the field of Manufacturing?
- What skills do you have that would help you to be an effective in this cluster?

## Learning Task & Exploration Activity

1. Introduce the Manufacturing Career Cluster Video.

### **Video Introduction:**

*Today, there's a high demand for workers in manufacturing fields with skills such as machinist, welder, and building trades.*

2. View the Manufacturing Career Cluster videos. Have students complete the Student Viewing Guide as they learn about the Career Cluster.
3. Students will fill out the "Career Cluster Research" section of the viewing guide and explore the Manufacturing webpage on <http://mygpsforsuccess.com/manufacturing-2/>.

## Closing

1. Have students complete the “Learned” Section of their KWL Chart from the Anticipatory Set with at least 3 pieces of information they learned about the cluster. Students may share out in class as well as discuss with a partner once they have finished.
2. Engage students in a whole class or small group discussion using the Discussion Questions section of this instructional plan – students may use their KWL chart as reference.

## Discussion Questions

1. How would you define this Career Cluster?
2. What surprised you about this Career Cluster?
3. What career pathways were represented in this video?
4. How do the skills and/or training necessary to be successful in these fields differ from one another?
5. What types of training are necessary to earn a job in the manufacturing industry?
6. What are the benefits of pursuing a High Tech Career?
7. What types of careers are associated with manufacturing and what types of materials are they working with?
8. Can you name local manufacturing careers in your community?

## Extended Learning Activities

*Suggested activities to increase student learning and exposure to this Career Cluster.*

- Plan a field trip to a local manufacturing facility.
- Have students participate in a project in which they must manufacture a product and distribute it to the school.
- Tour the local BOCES or vocational school.
- Have each student select a career from this Career Cluster. Students will research the career and present information to the class in the form of an oral presentation, poster, PowerPoint, video or Prezi presentation. Information to research and share might include salary, education required, typical day schedule, roles and responsibilities, positive aspects of the job and challenges associated with the job.
- Have each student make a list of the Career Readiness Skills that are his/her personal strengths, as well as a list of the skills and behaviors required for a career as an educator. Students compare the lists to determine what Career Readiness Skills need to be strengthened.
- Have students complete a job application and/or job interview with a local employer.
- Help students construct a resume for a specific career in this Career Cluster.
- Arrange for students to meet with the school counselor to discuss classes that would help prepare a student for careers in this Career Cluster and certifications that can be obtained during high school that would be of value.
- Have each student identify a postsecondary institution that is offering certifications or degrees that are required for working in this Career Cluster. He or she should obtain and complete admissions and scholarship applications for the school or program.

## Notes to Educator

This packet includes suggested activities questions, and materials to enhance student understanding of this career cluster. Each component may be used individually or modified to fit the needs of your classroom.

More information on this Career Cluster can be found at:

<http://mygpsforsuccess.com/manufacturing-2/>

In addition, GPS For Success has an array of resources, including:

- Interest Profiler: *online quiz to assist students in categorizing their interests by possible careers those interests apply to.*
- Scholarship opportunities
- Information on internships
- Sample resumes and cover letters
- Interview preparation materials
- Opportunities for students with disabilities