

Lesson Title: What is the DOT?

Career Cluster: Manufacturing

Essential Knowledge and Skills: Technical Skills, Leadership

Career Concepts: Career Research

Summary: Students will discover careers and pathways in the Manufacturing Career Cluster, identify Essential Knowledge and Skills needed in this cluster, create a list of print resources which would be helpful in researching career information, and practice working with a team member while constructing a file card “car”.

Course Objectives:

2.3 Students will be able to evaluate their own Essential Knowledge and Skills in relationship to their goals for learning, earning and living.

3.2 Students will be able to use information gathered from the career field/cluster model, Essential knowledge and skills materials, career exploration, and goal.

5.2 Students will be able to utilize printed material to access career information.

Lesson Objectives:

Students will...

- Identify pathways in the manufacturing career cluster.
- Determine the Essential Knowledge and Skills that apply to the manufacturing career cluster.
- Evaluate helpful coursework when preparing for manufacturing careers.
- Prepare a list of print resources for career information.
- Select a career cluster which matches his/her own interest.
- Identify their Essential Knowledge and Skills within the manufacturing career cluster which he/she wants to improve.
- Practice working as a team member to accomplish a task.
- Assess their Technical Skills on the CALS assessment.

Time: Four class periods

Required Materials: 3 File Cards, Paperclips, Straw, Tape, Scissors, Nebraska Career Education chart for Essential Knowledge and Skills in all career clusters, check list “What Skills Do I Want to Improve?,” activity sheet with list of printed resources from library, a place to take notes about each source, Nebraska Career Connections at www.NebraskaCareerConnections.org

Optional Resources: Career information in the career library, Nebraska Career Information System at ncis.unl.edu, States’ Career Clusters at www.careerclusters.org, www.dreamit-doit.com

Guest Presenters: Nebraska Workforce Development presenter or local group consisting of manufacturing supervisor, dispatcher, design engineer, or safety coordinator and the library/media specialist

Content and Teaching Strategies:

Anticipatory Set

Ask each student to name three careers and the pathways to career specialties within the manufacturing career cluster. Students should then share with the class a skill they want to improve and a way they believe they can accomplish the growth.

Lesson Components

1. Using the Nebraska Career Education charts (found at the Nebraska Career Connections Website), work with team members to identify Essential Knowledge and Skills needed in manufacturing careers
-  2. Students participate in pairs to create a file card “car”. Given three file cards, two paper clips, scissors, two short pieces of drinking straw and approximately eight inches of tape students should build a car that can roll down a small ramp. This should be presented as a problem solving activity for students to solve, but a solution can be found as the “Card Car” resource. If a group is unsuccessful the teacher may allow students a second attempt. Once students have solved this problem, have a discussion using these talking points:
 - What skills did you use to create your car?
 - What skills did you use to work with a teammate?
 - Why were some groups more successful than others? (teamwork, communication)
 - How many trials did you have before you came up with an idea that worked?
 - In this activity you “manufactured” a file card car. How do the skills you used in creating this car relate to the manufacturing industry?
3. Visit the career library OR have the library specialist bring printed career resources to the classroom for students to review and evaluate materials such as DOT (Department of Transportation, OOH, (Occupational Outlook Handbook) Career Encyclopedias, career book series, printed pamphlets, etc. Students research other careers in the manufacturing cluster/pathways with a partner. While researching, students should fill out the “Sources” activity sheet.
4. During class each student will research his/her own career interest utilizing the printed materials from the career library to identify necessary Essential Knowledge and Skills.
-  5. Students will complete chart on the “What Skills Do I Want to Improve?” activity sheet. Take this chart home and ask for parental input before completion. Emphasize to students this activity is to become more aware of Manufacturing Cluster knowledge and skills. It is unrealistic for students for students to already have all of these skills, when filling out the chart.
-  6. Have a guest presenter from Workforce Development or local manufacturing supervisor followed by questions and answers on the following topic: career options and skills needed in the manufacturing cluster. Use these talking points:
 - What skills are necessary in your career?
 - What career options are available in the manufacturing cluster? Provide the speaker(s) with a copy of the NCE (Nebraska Career Education) manufacturing career cluster.
 - What training is necessary in your career?

- What education is available?



7. Students should complete the activity sheet entitled “What Skills Do I Want to Improve?”, consider classes and extended learning which may assist the efforts to improve skills, and make an entry in their student notebook identifying what skills they want to improve and how they will improve each skill.



8. Students should update the CALS assessment.

Optional Student Activity:

1. Divide students into teams and have them research the history and development of the auto industry, the textile industry, the drug industry, technology industry and/or food processing industry.
2. Each team should create a PowerPoint presentation showing examples of how their items, i.e. cars, were first produced and a progression of advancements in production since then. Emphasis may be placed on outsourcing indicating which countries are contributing partners. Part of the presentation must show the change in careers with the change in production techniques.
3. Have students present their findings to the entire class.

Lesson Closure:



In groups of four, share your ideas with your classmates using the following talking points:

- What skills are needed in the manufacturing career cluster?
- Name three careers in the manufacturing career cluster.
- If you want to know a salary for a career in manufacturing, where could you look?
- If you want to know skills needed, where would you look?
- If you want to know the career’s outlook, where would you look?
- What skills do you want to improve?
- What extended learning did you choose to do to improve your skill?

Essential Knowledge and Skills Connection

The components of this lesson emphasize **technical skills and leadership**. Choose one of the following activities to help students connect the lesson with their own development of EKS:

- Write a journal entry, reflecting on one of the EKS used in this lesson. Students could choose a strength or weakness they wish to improve or enhance.
- Students complete a graphic organizer (see Supporting Documents—Teacher Resources) to emphasize EKS used in this lesson connected to home, school, and work.
- Have students use the model to identify EKS used during the activity.

Formative Assessments:



In the student notebooks, students should write down the skills they have for the manufacturing career cluster. They should also complete list of printed resources they would find helpful to research a career cluster. List beside each source the type of information it provides. Finally, students should complete the Technical Skills portion of the CALS assessment at the end of this lesson.

Sources

Name: _____

Name of source	Level of usefulness 5,4,3,2,1(low)	Type of information provided
Dictionary of Occupational Titles		Brief definition of a specific occupation
Occupation Outlook Quarterly		

What Skills Do I Want To Improve?

Name: _____

Essential Knowledge and Skills for Manufacturing Career Cluster

Skill	I Have All of These Skills	I Have Some of These Skills	I Want to Improve These Skills	My Plan for Improving Skills
COMMUNICATION				
Read and interpret data				
Use correct grammar and terminology				
Prepare and deliver presentations				
Apply active listening skills				
Interpret tables, charts, and figures				
EMPLOYABILITY AND CAREER DEVELOPMENT				
Demonstrate positive work behaviors				
Develop personal career plan				
ETHICS AND LEGAL RESPONSIBILITIES				
Demonstrate knowledge of and commitment to professional ethics and legal responsibilities				
INFORMATION TECHNOLOGY APPLICATIONS				
Use electronic mail applications				
Use Internet applications				
Use publishing applications				
Use presentation applications				

Skill	I Have All of These Skills	I Have Some of These Skills	I Want to Improve These Skills	My Plan for Improving Skills
LEADERSHIP AND TEAMWORK				
Provide group leadership				
Collaborate with others				
PROBLEM SOLVING AND CRITICAL THINKING				
Formulate solutions to problems using critical thinking skills while working independently and/or in teams				
SAFETY, HEALTH, ENVIRONMENTAL				
Explain how government agencies ensure compliance and promote improved performance				
SYSTEMS				
Explain how manufacturing businesses operate				
TECHNICAL SKILLS				
Describe the basic skills and knowledge required for careers in manufacturing				

My overall plan for improving my Essential Knowledge and Skills...

Card Car

Name: _____

FILE CARD CAR: Use one 3X5 card as the base of the car. Cut four wheels from remaining file cards. Tape two pieces of straw on bottom of car for axels to rotate within. Unbend two large paper clips as axels, insert THROUGH straws. Attach wheels to paper clips.

