

HEAVY EQUIPMENT CONSTRUCTION

TRADE LINK: HEAVY EQUIPMENT SERVICE

TEACHER BACKGROUND

Duration: One 45-minute lesson
Grade: Middle School & Grade 9
Group size: Individual or Pairs
Setting: Classroom (Indoors)

RATIONALE:

Machines have made the construction of mines, buildings, tilling of farms, harvesting of forests and hauling of materials significantly easier throughout the years. Now, with so much innovation, heavy equipment mechanics are needed to troubleshoot, adjust, overhaul and maintain equipment in each of those fields. Students will be able to identify machines from each industry and provide general facts about their use and operation.

METHOD:

In this activity, students will be asked to design a manual for someone who is going into the heavy equipment mechanic field. The manual will be designed by gathering information about machines in the construction industry (haul trucks, loaders, back-hoes, bull dozers, etc.). Students will also search for and add other machines commonly found in those industries.

CURRICULUM OUTCOMES:

Including but not limited to:

Technology 9: Students will examine key industry sectors in New Brunswick.

MATERIALS:

- Computer with internet access.
- Machine brochures (optional).
- Books about the industry or equipment (optional).

GETTING STARTED:

Heavy equipment mechanics are often responsible for handling multiple forms of heavy-machines from different industries or trades. Being responsible for so much equipment is hard. In this activity, you will research machines in the construction industry, figure out how they work and report common problems with them. This will be compiled in a Word Document that will help a new heavy-duty mechanic do their job more effectively.

ACTIVITY (SKILLS FOR SUCCESS):

Students are given the following details to carry out this assignment:

1. Students will research information about what types of machines they know about and have heard about. (Bulldozer, excavator, etc.) (Reading)
2. Students will research other machines that they can find from other industries (scoop tram – mining; tractor – farming, etc.) (Digital and/or Reading)
3. Student will write a description or purpose of each machine they find, their useful life, common repairs needed, cost, etc. (Writing)

4. Students will compare/contrast a piece of equipment that would have been used between 20 and 40 years ago to equipment used now. Keeping up on new equipment in the industry is an important task that would be used by heavy equipment mechanics. This can be done through a Venn Diagram or simply listing the similarities/differences. (Digital)
5. Lastly, students will be given a hypothetical budget of two million dollars and must list what equipment they would buy to start their own construction business. Students will be required to discuss why they would buy each item and what that means for repairs and maintenance costs (Problem Solving).
6. Students will submit their responses to their teacher.

BRANCHING OUT: (For Teacher)

1. Younger students can work towards identifying popular machines and their purpose.
2. High school students can work on performing cost-analysis of purchasing equipment vs. leasing equipment as well as troubleshooting annual repairs and costs based on business.

INFORMATION BITE:

In general, heavy equipment mechanics are employed by specialized repair shops and organizations that own or lease heavy equipment used in the construction, mining, forestry, material handling, landscaping, land clearing, agriculture, and transportation industries. Heavy equipment mechanics must interpret work orders and technical manuals, write service reports, keep equipment cleaned, lubricated, and maintained, diagnose faults or malfunctions, adjust equipment and repair or replace defective parts, components, or systems, test repaired equipment for proper performance, and ensure that the work done meets manufacturers' specifications and legislated regulations.

WHAT ABOUT SKILLS FOR SUCCESS?

As technology changes, a successful heavy equipment mechanic is required to review new research and information to be up-to-date on advancements and new trends in the industry. The ability to conduct research and review documents is an important skill to have mastered.