

SKILLED FUTURES VIRTUAL EXPERIENCE

SKILLED FUTURES IN ENERGY

CREATE YOUR OWN CRANE

A crane is a piece of heavy equipment machinery that lifts heavy objects, windows, concrete walls, shipping containers, houses, and so much more. The crane then moves them with great precision, into a new position. A crane is made up of three essential parts; the “hoist” or cable wound around a steel drum, a “boom” which is a long arm that can move up and down to maneuver the load, and a part used for moving the load around as it dangles from the boom. On some cranes this is a turntable on others it is wheels and tracks.

TOOLS AND SUPPLIES YOU NEED:

Plastic wrap tubes x 2	Loose rocks	Ruler	Fan	Toilet paper roll
String/Twine	Paper cup	Tape	Glue	Pencil

BUILD YOUR CRANE:

Step 1 - Cut a circle in the top of the box large enough that the toilet paper roll fits tightly into the hole. Secure the roll to the floor of the box with sticky tape or glue and fill the bottom with rocks for stability (to weigh it down) and then seal the box up with tape.



Step 2 - Take one of the sturdy plastic wrap rolls and fold down the edges of the thick roll to create a nook. Then slip the other end of the plastic wrap roll into the toilet paper roll.



Step 3 - Apply glue to the folded down edges of the plastic wrap roll and place the second roll on top horizontally. For extra strength tape the two rolls together.



Step 4 - Take the paper cup and create two small holes on either side of the cup. Cut a piece of string 15 cm long. Slide the end of the string through one of the holes and tie a knot to secure it. Then do the same on the other side. Hang the cup over the end of the crane and secure string with a piece of tape.



SKILLED FUTURES VIRTUAL EXPERIENCE

TEST YOUR CRANE:

It's time to test out your craftsmanship. Will your crane hold up under the pressure?

Test 1 - Weight Test

How many pebbles can your crane hold without falling over? Start with one and keep adding until your crane can not hold anymore. Does adding more weight inside the box at the base help?

Test 2 - Wind Test

In Nova Scotia we get a tremendous amount of wind. Can your crane hold up to the wind? Test it out with the use of a house fan. Try on level 1 and go up as high as the fan will go. Does adding more weight inside the box at the base help?

Do you want to share your creation for a chance to win a prize?

Take pictures or video of your crane creation and share them and how you did testing out your crane with us on Facebook and/or Instagram by including #SkilledFutures in your post and tagging @SkillsNS.

HAPPY BUILDING!

CAREER CONNECTIONS - HEAVY EQUIPMENT INDUSTRY

This activity can be connected to the following careers in the Heavy Equipment Industry:

Heavy Equipment Technician	Desiel Engine Repair	Backhoe operator
Bulldozer operator	Excavator operator	Grader operator
Side boom tractor operator	Construction Equipment Mechanic	Diesel Mechanic
Farm Equipment Mechanic	Heavy Mobile Logging Equipment Mechanic	Tractor Mechanic
Heavy-duty Equipment Technician	Heavy Mobile Mining Equipment Mechanic	

Disclaimer

This activity has been presented by Skills Canada - Nova Scotia with permission of the activity's original developer [At Home with Ali](#).

Photo credit to [At Home with Ali](#).



SKILLED FUTURES VIRTUAL EXPERIENCE

CURRICULUM OUTCOME CONNECTIONS

The Skilled Futures Virtual Experience has been confirmed with representatives from the Department of Education & Early Childhood Development to connect with the following curriculum outcomes:

Grade 7-8 Technology Education

1. Learners will implement the design process in relation to the concept of Netukulimk
2. Learners will analyse how mechanical and electrical devices work
3. Learners will construct a solution to a design challenge

Grade 9 Technology Education

1. apply principles of design
2. develop a plan to solve energy engineering problems
3. design and construct solutions to energy engineering problems
4. evaluate solutions to energy engineering problems
5. construct or modify a device that demonstrates the conversion of energy
6. create a mechanical device that demonstrates a change in motion
7. use mechanical advantage in the solution of a technological problem
8. use knowledge of energy sources to make decisions about real-life energy problems

Exploring Technology 10

1. use knowledge of energy sources to make decisions about real-life energy problems
2. evaluate solutions to problems by selecting appropriate testing methods
3. demonstrate an understanding of various STEM (science, technology engineering, math) connections to design problems
4. explore skilled trades and technology-related careers

Energy Power and Transportation Technology 11

1. distinguish and demonstrate at least three ways of transmitting power to machines, and solve problems involving simple machines to effect mechanical advantage
2. explain the role of research and development in gaining new knowledge and solutions to problems in the realm of energy, power, and transportation

