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Overview

Questacon – The National Science and Technology Centre and Raytheon Australia are combining to give schools across Australia a unique challenge. To respond to this challenge, students will gain experience in engineering and innovation by building a working, floating crane. Along the way, they will cover topics such as simple mechanics, motion, measurement and geometry and communication. Links to the Australian Curriculum are also provided.

Students (and teachers) will be required to work on the challenge throughout Term 4. During this time, they will receive guidance from Questacon and project mentors during virtual workshops and via an online forum. Finally, they will give a short presentation to all participants during the last virtual excursion.

Teachers will be responsible for coordinating ‘build’ time and time for the virtual excursions. However, students are able to work on projects in their own time if, for example, the project is set as a homework task. There will be a total of four virtual excursions throughout the Make Float Move project (see the timetable below).

This project is linked to the Australian Curriculum and is complemented by teacher resources.

Virtual excursion timetable

Date and time	Description
Thursday 16 October 2014 (time to be confirmed)	Challenge launch Meet the other schools and participate in an innovation challenge workshop.
Thursday 23 October 2014 (time to be negotiated)	Progress session and Mechanisms workshop Students will participate in virtual workshops - via videoconference - where they can ask for assistance and be provided with extra supportive information about their projects.
Thursday 6 November 2014 (time to be negotiated)	Presentation skills workshop Students will be given an interactive tutorial on presentation skills by Questacon staff.
Thursday 20 November 2014 (time to be negotiated)	Final presentations Students present the results of their investigations, telling the story behind their project, demonstrating their object and presenting answers to the questions within each challenge.

The Challenge

Students will be tasked to create a floating crane capable of lifting and moving whilst floating on water.

To meet the compulsory part of this challenge, the crane should:

- float and stay level on water
- hold a load of 200 g
- hold the load 10 cm above the surface of the water
- move/carry the load 50 cm across the water.

You may choose to complete the challenge as a class project, or split your students into small teams.

Students may use parts sourced from hardware stores, toy stores or aquariums, but they may not use a ready-made toy or similar to meet the challenge.

Additional challenges

You may also choose to give your students as many of the following additional challenges as you wish, depending on their skills, enthusiasm and time available:

- Create a stability device to keep your platform steady in bad weather and high swells
- Create a mechanism to raise or lower the load from the surface of the water
- Create a way to make the crane or load rotate.

The additional challenges are optional, and any combination or number of additional challenges may be completed.

The Final Presentation

Your class will be asked to present the results of the challenge at the final event on Thursday 20 November. You may need to choose class representatives for this task to present about one object or the overall success of the class. The presentation will be delivered via videoconference to all other project participants.

During the presentation, your students will give the story behind their project, talk about any difficulties they encountered, answer the questions posed during the challenge, as well as demonstrate their object. If your students had trouble meeting the requirements of the challenge, they may instead present on problems they encountered and how they attempted to resolve these problems.

Your students will be given a tutorial on presentation skills by Questacon staff prior to the final event (see timetable).

Project Support

A web forum will be setup to encourage collaboration both within and between schools - students and teachers will be able to discuss and share their ideas, challenges and solutions.

This will be a closed forum for current Make Float Move participants only. You will receive a log-in invitation prior to the start of the project.

Contact

Your contact at Questacon is Rachel Rayner.

Email: digitaloutreach@questacon.edu.au

Phone: (02) 6112 9773

King Edward Terrace Canberra
02 6270 2800
www.questacon.edu.au



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Department of Industry

