

## **Engineer Design Challenge - Phase I**

The “ Big Concept” of the Engineer Design Challenge is “Sink or float”. The characteristics and the attributes of an object determine whether it floats or sinks in the water.

Based on the Ontario Early Learning Assessment for Preschool age Children, the learning standard associating with this challenge include, but not limited to the following,

- a. Problem Solving Skill
- b. Practice of Fine Motor Skill
- c. Ability to make hypothesis and test the hypothesis
- d. Make inquiries and express ideas and opinion
- e. Teacher provides spontaneous resources to allow the child to follow their own learning path
- f. Extend children’s vocabulary
- g. Encourage verbal communication between children
- h. Introduce and practice team work

Based on the age group of students, both NASA Engineering and NGGS Design Process will be suitable framework to borrow for problem solving in this challenge. Knowledge that is required for the students include density, weight, number reading and recording and comparison.

### **Possible activities**

1. Have students put different objects in the water and test if they sink or float. If they sink, what can we change to make it float? Students will brainstorm and design solution. Teachers’ help may be required in creating and leading to a solution.
2. Telling a story about a drowning character, children use the material provided to save the drowning character (Students will design solution on their own)
3. Telling a story about a drowning character, children use the material provided to save the drowning character (Teacher will design the solution by using paper to fold into a paper boat to save the character. Children will learn folding a paper boat from teacher)

After thorough consideration, activity two and three may be the best activities. I am also debating between these two activities because I do want children to come out with the design solution on their own, however, I am afraid based on their current skill and capability, an original design solution may not be realistic for the students at this age, which could lead to incompleteness of the challenge. With activity 3, I know the solution will work, however, will that make the activity lose

the component of designing. I am open to any suggestion to choosing and implementation of these two activities.