OCTE 2012 – Elementary Conference Workshops

GRADE 2 | UNDERSTANDING MATTER AND ENERGY, PROPERTIES OF LIQUIDS AND SOLIDS

FLOATING FLAGPOLE DESIGN CHALLENGE

OVERALL EXPECTATIONS
By the end of Grade 2, students will:
2. investigate the properties of and interactions among liquids and solids.

SPECIFIC EXPECTATIONS
2. Developing Investigation and Communication Skills
By the end of Grade 2, students will:

2.1 follow established safety procedures during science and technology investigations (e.g., clean up spills as soon as they happen)
2.5 use technological problem-solving skills (see page 16), and knowledge acquired from previous investigations, to design, build, and test a structure that involves interactions between liquids and solids (e.g., an object that floats) Sample guiding questions: What did you build? How does it use the properties of liquids and solids? What changes might you make based on the testing that you did on your object? Who might find this information useful?
2.6 use appropriate science and technology vocabulary, including clear, opaque, runny, hard, greasy, and granular, in oral and written communication
2.7 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., use a simple drawing program to write a booklet for the school library describing class experiments in investigating liquids and solids)

Learning Goals

1.
1. Students will follow established safety procedures during science and technology investigations (e.g., clean up spills as soon as they happen).
2. Students will design and construct a structure that involves interactions between liquids and solids (e.g., ... an object that floats, in this case a rounded object that will keep a flagpole upright when mounted on top of it - instead of rolling onto its side).
3. Students will use appropriate science and technology vocabulary, including clear, runny, hard, and granular, in oral and written communication.
4. Students will use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., ... describe their design solution in investigating liquids and solids).

Assessment and Evaluation

For Assessment and Evaluation support, please see Appendix G.

Check items you wish to evaluate during the completion of this unit. Skip items that do not apply to your current program needs.
You may differentiate your assessment by offering your students a variety of these items as "choices", while making other items mandatory.

- Please see Appendix B for this unit's assessment rubric (assessment of learning).

- Please see Appendix C for this unit's Grade Sheet (assessment of learning).
- Please see Appendix D for the Continuum for Technological Problem Solving rubric (assessment for/as learning).
- Please see Appendix E for the Assessment As Learning, Student Self-Assessment Log" (assessment as learning).
- Please see Appendix F for the Teacher's Record, Assessment For Learning sheet.

Success Criteria

Knowledge and Understanding (K&U), please see "Appendix B" for corresponding evaluation items:

- the student acquired a knowledge of facts and terminology related to liquids and solids, as well as, used tools and materials safely and appropriately in building and using a floating flagpole device (K&U, 1);

- the student understands content (e.g., concepts, ideas, and processes) that address her/his floating flagpole device (K&U, 2);

Thinking and Investigation (T&I), please see "Appendix B" for corresponding evaluation items:

- the student developed ideas, regarding potential solutions to his/her design challenge, and developed a suitable plan for solving it (T&I, 3);

- the student used processing skills and strategies (e.g., performing and recording, gathering evidence and data, observing, manipulating materials and using equipment safely, ... proving) to design and fabricate a floating flagpole device (T&I, 4);

- the student used critical/creative thinking processes, skills, and strategies to test her/his floating flagpole device, and determine if her/his prototype met the design challenge requirements (T&I, 5).

Communication (Com.), please see "Appendix B" for corresponding evaluation items:

- the student completed an oral, visual, or written report that was organized in a clear, logical manner, and included diagrams, models, and media where appropriate (Com. 6);

- the student's report accurately described the steps taken to solve the design challenge, as well as, the learning that he/she acquired from the unit; the student used an appropriate oral, written and/or media form for the selected audience e.g., teacher, or teacher and classmates (Com. 7);

- the student included the correct use of scientific vocabulary and terminology (e.g., clear, runny, hard, and granular) in his/her report (Com. 8);

Application (App.), please "Appendix B" for corresponding evaluation items:

- the student followed established safety practices for using tools, and materials (App. 9);

- the student listed beneficial aspects of his/her design regarding people, other living things, and the environment (App. 10);

- the student proposed courses of practical action that involved the use of her/his floating flagpole device (e.g., to help those in society who need to float marker flags in bodies of water, and need them to remain upright) (App. 11).

Curriculum Connections and Additional Assessment Opportunities

Language:

- Oral Communication, Overall Expectation 2 (select from specific expectations 2.3, 2.4, and 2.7);
- Writing, Overall Expectations 2, and 3 (select from specific expectations 2.1, 2.4, and 3.3);

Materials and Tools List

Tools:

- CSA approved safety glasses/goggles, one pair per person (parent volunteers included),
- scissors, minimum one pair for every 2 projects (students may supply their own),
- a tub, pail or basin to use as a water station for testing the floating flagpoles,
- two or three funnels per class (opening should fit a water bottle top),
- small scoops or measuring cups for transferring materials into the funnel.

Materials:

- 6" (15 cm) of tape per project (e.g., masking tape, duct tape, electric tape, etc.),
- one piece of modeling clay (a ball that is about the diameter of your thumbnail) per project,
- one straw per project (for the flagpole),
- construction paper one small piece per project (to make a flag for the flagpole),
- two elastic bands per project (they should be long enough to fit around and hold two plastic bottles together),
- clean sand, about half a pail for one class,
- **send home a note in advance of this activity asking caregivers to collect and send in items from the list below;**
- 1 or two per project, small plastic bottles (rinsed, dried, and with caps).

Internet Resources to Get You Started (always stay on the main page)

- Learn360 is licenced through the Ministry of Education (See OSAPAC). If you do not have a username and login, please contact your Board's information services department and request one. The activity section begins 9:36 into the video.
  http://www.learn360.com/ShowVideo.aspx?ID=223746
- an explanation on buoyancy
  http://www.letstalkscience.ca/images/users/78/Buoyancydemo.pdf
- centre of gravity and boats explained, go to "p. 46 Grade Two"
  http://letsdoscience.com/content_pdf/Grade2BuoyancyBoats.pdf
- illustrates the addition of ballast (weight) to the bottom of a pop bottle sailboat (please note that students will do this inside rather than outside the bottle)
  http://familyfun.go.com/crafts/super-sailboat-670894/

Background Knowledge

Have students begin with a single bottle. Attach the straw flagpole using the piece of modeling clay and tape. Test the structure. Students will find that plastic will float in water because it

displaces more water mass than its own mass. Unfortunately, the flagpole will cause the bottle to roll over on its side.

Students will solve this problem either by putting enough sand into their bottles to create a centre of gravity that is low enough to keep the flagpole upright and stable, or they will use the elastics to join two plastic bottles together like pontoons. The pontoons will provide a base that is wide enough to support the torsional forces created by the flagpole.

See "Appendix H: Samples" for pictures of student work.

Activity Description

Design Challenge:
Students design, build and test a structure that involves interactions between solids (plastic) and liquids (water). Students will discover that a flagpole mounted on a plastic bottle will roll over on its side when placed in water. Faced with this problem, students will create a solution that will allow the flagpole to remain upright in the water. With the materials provided, students should arrive at (or be supported to find) a solution that will, either use sand as ballast in a single bottle, or a pontoon system using two bottles to solve the problem.

Minds On/Hands On

1. Whole class, project or hand out copies of Appendix A: Floating Flagpole, and hand out Appendix E: Assessment As Learning, Student Assessment Log.
2. Whole class, refer students to the picture in Appendix A, inform students that they are viewing a picture of a safety flag for scuba divers. Explain that it tells boaters that there are scuba divers near the flag, so the boaters know stay away from that area (this helps boaters to avoid having accidents with the scuba divers). Unfortunately, there is a problem with the way the flag in the picture works, and it needs to be solved.
3. Ask students to "turn and talk" about what they think the problem could be.
4. Whole class, briefly discuss your students' suggestions and record their main ideas.
5. Whole class, inform your students that coming activity will help them to understand how solids and liquids interact with each other, and will give them a chance to solve the problem they are having with the flag.

Action

1. Teacher introduces the design challenge and has the materials and tools on display. A sample introduction is as follows:
    a. Scuba Safety Shops is working on a new floating diver zone flag to help keep scuba divers safe. There is a problem with their design and they need your help. You will build a model of their product and test it to see what is going wrong. Once you have figured this out, your job is to fix the problem so scuba divers can use the floating diver below flag safely.
    b. After receiving instructions and clarification, students fill out item A on the Student Self-Assessment Log (Appendix E).
    c. Students build and test a model using a single plastic bottle (cylindrical, no flat or wider sides). Students may use modeling clay and tape to fix the drinking straw flag to the bottle. When the students test the floating flagpole, it will consistently roll over on its side.
2. Small groups, students discuss the problem they have discovered, and brainstorm solutions that use the tools and materials provided. This is followed by a whole class discussion of the

ideas generated, led by the teacher. Students complete item B on the Student Self-Assessment Log.

3. Teacher leads a whole class discussion that narrows the choices down those that reflect the use of ballast, or pontoons. Some may suggest an anchor or weight that hangs below, if you have items such as string and paperclips on hand this could be an option as well. Teacher further narrows the options based on the tools and materials available, and the students' capabilities. Students complete item C on the Student Self-Assessment Log.
4. Teacher reviews, or provides instruction on, Learning Skills related to this type of task (e.g., safety, problem solving, collaboration, and responsibility).
5. Teacher leads discussion/brainstorming session on what makes a good floating flagpole (co-constructs success criteria) and records items that reflect the curriculum goals. Students complete item E on the Student Self-Assessment Log.
6. Students select one of the final solutions listed above. Students create a set of plans (labeled pictures and oral description) for making a floating flagpole device using the tools and materials available. Teacher reviews plans for feasibility. Students with approved plans move on to the next step. Students complete item D on the Student Self-Assessment Log.
7. Students follow their plans to fabricate their floating flagpole device. Students complete item F on the Student Self-Assessment Log. Review slipping hazards and the need to clean up, and be safe around spills.
8. Teacher reviews/discusses the interactions that take place between liquids and solids including floating in a liquid, and sinking in the liquid (either fully or partially).
9. Students test their floating flagpole devices and determine if they solve the design challenge as required. Teacher supports students as they record observations, and results during this process. Students complete items G and H on the Student Self-Assessment Log. Review slipping hazards and the need to clean up, and be safe around spills.
10. If improvements are necessary, and if time permits, students should redesign their prototype and re-test it to determine if the changes were successful. Review slipping hazards and the need to clean up, and be safe around spills.
11. Students, make note of all final observations and insights, then begin working on their reports.

Consolidation

12. In groups, students discuss what went well with their designs and tests, what changes were made, why they were needed, and what they would do differently if given another opportunity. This material should be added to the students' reports. Students complete items I - J on the Student Self-Assessment Log.
13. In groups, students discuss/debate how their floating flagpole devices are good for them in some ways, as well as how they might be bad for them in others. Students complete item K on the Student Self-Assessment Log.
14. Students, create an oral report that is supported by a labeled drawing or drawings and written sentences to explain what the design challenge was, how successfully they solved it, and how the liquids (water) and solids (plastic bottles - with or without ballast) interacted with each other. Students should strive to include as many vocabulary words as possible (e.g., including clear, runny, hard, and granular). Students complete item M on the Student Self-Assessment Log.
15. Students, present an oral report that is supported by a labeled drawing or drawings and some written sentences to explain what the design challenge was, and how successfully they solved it. Students complete item L on the Student Self-Assessment Log.

Appendix A: Floating Flagpole

Source:
http://www.google.ca/imgres?q=inflatable+dive+flag&start=157&num=10&hl=en&client=safari&rls=en&biw=1024&bih=565&tbm=isch&tbnid=vgtxmnA1rZkTPM:&imgrefurl=http://westsidespearfishing.com/%3Fpage_id%3D3%26category%3D66&docid=h0vEyld1wtTXIM&imgurl=http://westsidespearfishing.com/wp-content/plugins/wp-shopping-cart/product_images/Sea%252520Sports%252520torpedo%252520dive%252520float.jpg&w=297&h=170&ei=LoiUT_qME9HG6AGa7IixBA&zoom=1&iact=hc&vpx=756&vpy=153&dur=447&hovh=135&hovw=234&tx=125&ty=68&sig=114824276313666757009&page=12&tbnh=123&tbnw=215&ndsp=13&ved=1t:429,r:4,s:157,i:167

Appendix B: Assessment Rubric (Assessment **of** Learning)

This rubric was developed from the Ontario Curriculum Grades 1-8 Science and Technology, Revised 2007 document.				
	Level 1	Level 2	Level 3	Level 4
Knowledge and Understanding (K&U) – Subject-specific content acquired in each grade (knowledge), and the comprehension of its meaning and significance (understanding)				
	The Student:			
1. Knowledge of content (e.g., facts and terminology related to the interactions of solids and liquids; safe use of tools and materials)	demonstrates limited knowledge of content	demonstrates some knowledge of content	demonstrates considerable knowledge of content	demonstrates thorough knowledge of content
2. Understanding of content (e.g., concepts, ideas, and processes involving interactions between solids and liquids)	demonstrates limited understanding of content	demonstrates some understanding of content	demonstrates considerable understanding of content	demonstrates thorough understanding of content
Thinking and Investigation (T&I) – The use of critical and creative thinking skills and inquiry problem solving skills and/or processes				
	The Student:			
3. Use of initiating and planning skills and strategies (e.g. identifying the problem and developing plans)	uses initiating and planning skills and strategies with limited effectiveness	uses initiating and planning skills and strategies with some effectiveness	uses initiating and planning skills and strategies with considerable effectiveness	uses initiating and planning skills and strategies with a high degree of effectiveness
4. Use of processing skills and strategies (e.g., performing and recording, gathering evidence... data, observing, manipulating materials and using equipment safely, ... proving) to design and fabricate a floating flagpole device.	uses processing skills and strategies with limited effectiveness	uses processing skills and strategies with some effectiveness	uses processing skills and strategies with considerable effectiveness	uses processing skills and strategies with a high degree of effectiveness
5. Use of critical/creative thinking processes, skills, and strategies (e.g., analysing, interpreting, problem solving, evaluating, forming and justifying conclusions on the basis of evidence) to complete a fair test to determine if the prototype meets the design requirements for this task	uses critical/creative thinking processes, skills, and strategies with limited effectiveness	uses critical/creative thinking processes, skills, and strategies with some effectiveness	uses critical/creativ e thinking processes, skills, and strategies with considerable effectiveness	uses critical/creative thinking processes, skills, and strategies with a high degree of effectiveness
Communication (Com.) – The conveying of meaning through various forms				
	The student:			
6. Expression and organization of ideas and information in oral, visual, and/or written forms (complete a report that is organized in a clear, logical manner and includes diagrams	expresses and organizes ideas and information with limited effectiveness	expresses and organizes ideas and information with some effectiveness	expresses and organizes ideas and information with considerable effectiveness	expresses and organizes ideas and information with a high degree of

and models where appropriate)				effectiveness
7. Communication for different audiences and purposes in oral, visual, and/or written forms (accurately describe the learning that he/she acquired from this unit and use an appropriate form for the selected audience, e.g., teacher, or teacher and classmates)	communicates for different audiences and purposes with limited effectiveness	communicates for different audiences and purposes with some effectiveness	communicates for different audiences and purposes with considerable effectiveness	communicates for different audiences and purposes with a high degree of effectiveness
8. Use of conventions, vocabulary, and terminology (e.g., clear, runny, hard, and granular) in oral, visual, and/or written forms	uses conventions, vocabulary, and terminology with limited effectiveness	uses conventions, vocabulary, and terminology with some effectiveness	uses conventions, vocabulary, and terminology with considerable effectiveness	uses conventions, vocabulary, and terminology with a high degree of effectiveness
Application (App.) – The use of knowledge and skills to make connections within and between various contexts				
	The student:			
9. Application of knowledge and skills (e.g., concepts and processes, use of equipment and technology, investigation skills) in familiar contexts	applies knowledge and skills in familiar contexts with limited effectiveness	applies knowledge and skills in familiar contexts with some effectiveness	applies knowledge and skills in familiar contexts with considerable effectiveness	applies knowledge and skills in familiar contexts with a high degree of effectiveness
10. Making connections between society, science, technology, and the environment regarding the design solution selected and its impacts on people, other living things, and the environment	connects science, technology, society, and the environment with limited effectiveness	connects science, technology, society, and the environment with some effectiveness	connects science, technology, society, and the environment with considerable effectiveness	connects science, technology, society, and the environment with a high degree of effectiveness
11. Proposing courses of practical action to deal with problems relating to science, technology, society, and the environment (e.g., to help those in society who wish to enjoy scuba diving safely)	proposes courses of practical action of limited effectiveness	proposes courses of practical action of some effectiveness	proposes courses of practical action of considerable effectiveness	proposes highly effective courses of practical action

Appendix C: Assessment Of Learning, Grade Sheet.

Teacher's Record: Assessment **Of** Learning Use with the Assessment Rubric	Teacher: ____________________ Class: ______ Unit: __________________________ Date: ___/___/___										
	Knowledge and Understanding		Thinking and Investigation			Communication			Application		
Student's Name	1	2	3	4	5	6	7	8	9	10	11

Appendix D: Assessment For Learning
Continuum For Technological Problem Solving

Targets for Grades 1-3 are in the Beginning to Exploring range.

Beginning > Exploring > Emerging > Competent > Proficient			
Initiating and Planning			
The student:			
(A) recognizes a practical problem in a given context	identifies practical problems to solve in the immediate environment	identifies practical problems to solve in the local community	identifies practical problems to solve
(B) with support (e.g., as a class or in small groups), brainstorms possible solutions to a practical problem	with support (e.g., as a class or in small groups), generates a list of possible solutions to a practical problem and determines which are realistic in the classroom and/or the real world	identifies possible solutions to a practical problem and explains how each might solve the problem	identifies possible solutions to a practical problem and prioritizes them with regard to their potential for solving the problem
(C) with support (e.g., as a class or in small groups), selects one possible solution to implement	selects a possible solution to implement	selects a possible solution to implement, and provides reasons for the choice	selects a possible solution, and provides reasons for the choice that take into account considerations such as function, aesthetics, environmental impact
(D) with support (e.g., as a class or in small groups), makes a simple plan to carry out the solution	makes a simple plan (individually or in small groups), including simple drawings and/or diagrams, to carry out the solution	outlines (individually or in small groups) the steps of a plan, including labeled drawings and/or diagrams, to solve the problem	outlines in detail, including technical drawings and/or diagrams, each step of a plan to solve the problem
(E) with support (e.g., as a class or in small groups), establishes a limited number of criteria for evaluating proposed solutions to the problem	with support (e.g., as a class or in small groups), establishes a limited number of criteria for evaluating proposed solutions to the problem	contributes to establishing general criteria for evaluating objects or devices designed to solve the problem	contributes to establishing general criteria for evaluating objects or devices designed to solve
Performing and Recording			
The student:			
(F) with support (e.g., as a class or in small groups), carries out the pre-determined plan	with support (e.g., as a class or in small groups), carries out the pre-determined plan	carries out the pre-determined plan (individually or in pairs or small groups)	carries out the pre-determined plan
(G) with support, designs, builds, and tests (on the basis of pre-determined criteria) a	with support, designs, builds, and tests (on the basis of pre-	designs, builds, and tests (on the basis of pre-determined	designs, builds, and tests (on the basis of pre-determined

device or an object to solve the problem	determined criteria) a device or an object to solve the problem	criteria) a device or an object to solve the problem	criteria) a device or an object to solve the problem
(H) records results using pictures and/or tally charts	records results in a variety of ways, such as sentences, simple drawings, diagrams, and/or charts, and/or charts	records results in a variety of ways, such as sentences, drawings, labelled diagrams, graphs	records results in a variety of ways, such as sentences, technical drawings, labeled diagrams, graphs, and/or charts
Analyzing and Interpreting			
The student:			
(I) with support, identifies how well the chosen solution solved the practical problem, using the pre-determined criteria	identifies how well the chosen solution solved the practical problem, using the pre-determined criteria	explains how well the chosen solution solved the practical problem, and suggests possible changes to the criteria and the solution	explains how well the chosen solution solved the practical problem, using qualitative and/or quantitative data, and suggests possible changes to the criteria and the solution
(J) with support, suggests something that might be changed about the solution to the problem identifies some things that could be done differently to improve the solution to the problem	identifies and explains what changes could be made to the plan and how to improve the solution to the problem, and gives reasons for the changes	identifies and explains what changes could be made to the plan and the testing process, and how to improve the solution to the problem, and gives reasons for the changes	identifies and explains what changes could be made to the plan and the testing process, and how to improve the solution to the problem, and gives reasons for the changes
(K)	identifies some possible beneficial and non-beneficial impacts of the chosen solution for himself/herself or others	identifies the effects of the chosen solution on himself/herself, others, and/or the environment, considering things such as cost, materials, time, and/or space	identifies the effects of the chosen solution on himself/herself, others, and/or the environment, considering things such as cost, materials, time, and/or space, and suggests ways in which undesirable effects could be lessened or eliminated
Communicating			
The student:			
(L) describes orally, and/or using drawings, pictures, and/or simple sentences, the problem and how he or she solved it	describes orally, and/or using drawings, pictures, and/or simple sentences, the problem and how he or she solved it	describes orally, and using labelled drawings and diagrams, charts, graphs, and/or written descriptions, the problem and how he or she solved it	describes orally, and using labelled drawings and diagrams, charts, graphs, and/or written descriptions, the problem and how he or she solved it
(M) uses grade-appropriate science and technology vocabulary correctly	uses grade-appropriate science and technology vocabulary correctly	uses grade-appropriate science and technology vocabulary correctly	uses grade-appropriate science and technology vocabulary correctly

Appendix E: Assessment As Learning, Student Self-Assessment Log

Name:_____ Teacher:_____ Class: _____

These descriptors reflect skills that have reached the Beginning/Exploring levels on the "Continuum for Technological Problem-Solving Skills."

Circle the correct thumb to let your teacher know how you are doing.

 I'm doing great!  I'm doing okay.  I need some help with this.

A. I know what problem I have to solve.

B. With some help, I can share ideas for floating safety flags that will solve the problem.

C. With some help, I can pick a good idea for a floating safety flag that will solve the problem.

D. With some help, I can tell you my plan and make a drawing of the floating safety flag I will build.

E. With some help, I understand what will make a good floating safety flag.

F. With some help, I can follow my plan.

G. With some help, I can design build and test my floating safety flag.

H. I can use sentences and drawings to show you how my floating safety flag works.

I. I can tell you what is good about my floating safety flag, and if it solved the problem.

J. I can tell you something that will make my floating safety flag better.

K. I can tell you some things about my floating safety flag that are good for me, and some things about it that may not be good for me.

L. I can tell you about the design problem and how my floating safety flag solved it by talking, using pictures I have drawn, and sentences I have written.

M. I can use the science words we have learned such as clear, runny, hard, and granular.

Parent/Guardian's Review

1. Signed:_____ Date: _____

2. Signed:_____ Date: _____

Appendix F: Assessment For Learning, Tracking Sheet

Teacher's Record: Assessment **For** Learning, Technological Problem Solving Skills Continuum	Teacher: ______________________ Class: ___________ Unit: ___________________________ Date: ____/____/____ Suggested Assessment Codes: B - beginning, Ex - exploring, Em - emerging, C - competent, P - proficient												
	Initiating and Planning					Performing and Recording			Analysing and Interpreting			Communicating	
Student's Name	**(A)**	**(B)**	**(C)**	**(D)**	**(E)**	**(F)**	**(G)**	**(H)**	**(I)**	**(J)**	**(K)**	**(L)**	**(M)**

Appendix G: Support for Assessment and Evaluation

Assessment as/for/of Learning

It is the goal of the OCTE Elementary Committee to support their members in the development of these skills. This year the focus is on providing feedback (assessment for and as learning) using the Ministry's "Continuum for Technological Problem Solving Skills" (Science and Technology Grades 1-8, pp. 17-18) Please note that only the Ministry's "Achievement Chart -- Science and Technology, Grades 1-8" (Science and Technology Grades 1-8, pp. 26-27) is to be used for assessment of learning.

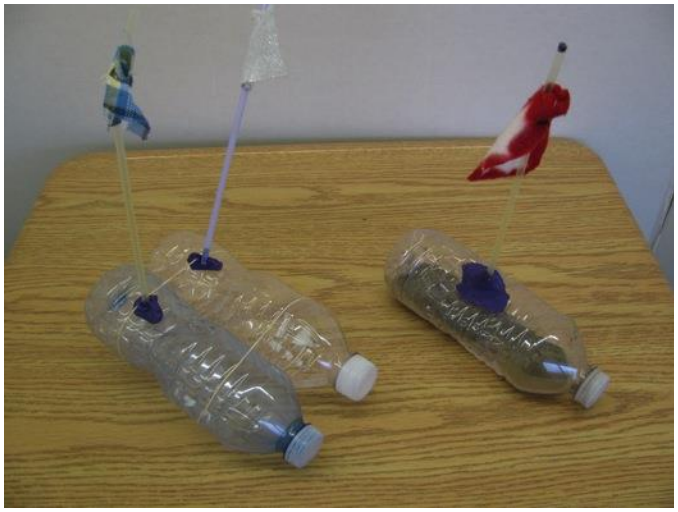
A summary of the three forms of assessment addressed in the Ministry of Education's Growing Success (2010) document is as follows:

- assessment for learning involves generating feedback about your students' progress that is shared with them before assessing for report card grades;
- assessment of learning is when you generate marks/levels for your report cards;
- assessment as learning, when developed fully, is when students provide their own feedback and assessment (peer and/or self) regarding their learning; students use this information to set learning goals, and to select appropriate learning strategies for their success.

Here are some suggestions to support the implementation of "Assessment as Learning" in your program; they are as follows:

1. Provide your students with a copy of "Appendix E: Assessment as Learning, Student Self-Assessment Log" and refer to applicable statements (see statements A-M) for discussion, before each of these items are addressed.
2. Ensure that the learning goal for each item is clearly understood by your students. Use student friendly language wherever possible.
3. Provide opportunities for self/peer assessment (move from structured to student directed as your students develop this skill).
4. Discuss or refer to successful and unsuccessful work (exemplars, or student generated materials) to provide benchmarks for your students' self/peer assessments.
5. Collect and review your students' "Assessment as Learning, Student Self Assessment Log." Make note of who needs additional support. Schedule time for these students into your next lesson (or provide opportunities for extra help, if possible).
6. Use your students' self/peer assessments to determine if a task requires modification to support successful learning.
7. Refer to pp. 27-36 in the Growing Success document for complete details. Reference: Ontario. Ministry of Education. (2010). *Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools, First Edition, Covering Grades 1-12.* Toronto: Author. ISBN 978-1-4435-2284-7 (Print), ISBN 978-1-4435-2285-4 (PDF) (Rev.), ISBN 978-1-4435-2286-1 (TXT), © Queen's Printer for Ontario.

Appendix H: Samples



Photographs by: Darren Foy