

Educators Guide - Ooey Goey Oobleck (STEM To-Go)

<u>Grade(s)</u> : Grade 2	<u>Time needed</u> : 30 minutes
<u>Curriculum Area(s)</u> : Matter and Energy	<u>Lesson Topic</u> : Ooey Goey Oobleck
<p><u>Learning Goal(s)</u>: By the end of the activity, students will be able to:</p> <ul style="list-style-type: none"> - Describe the differences between solids and liquids - Learn about the characteristics of non-Newtonian fluids 	

<p>Overall Expectation(s) <i>Take this directly from Ontario Ministry of Education documents.</i></p> <p>C2. Exploring and Understanding Concepts demonstrate an understanding of the properties and physical changes of liquids and solids</p>	<p>Related Specific Expectation(s)</p> <p>C2.2 describe the properties of liquids and solids</p> <p>C2.3 describe properties of liquid water and solid water, and identify the conditions that cause changes from one state to the other</p> <p>C2.4 identify conditions in which the states of liquids and solids remain constant and conditions that can cause their states to change</p> <p>C2.6 classify solid objects and materials in terms of their buoyancy and in terms of their ability to absorb or repel water</p>
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<p>Curriculum Connections Connections with <i>Mathematics</i> when making the oobleck.</p>	
<p>Overall Expectation(s) B2. Operations use knowledge of numbers and operations to solve mathematical problems encountered in everyday life</p>	<p>Related Specific Expectation(s)</p> <p>B2.1 Properties and Relationships - use the properties of addition and subtraction, and the relationships between addition and multiplication and between subtraction and division, to solve problems and check calculations</p> <p>B2.2 Math Facts - recall and demonstrate addition facts for numbers up to 20, and related subtraction facts</p>

<p>Safety Do not eat oobleck. Oobleck can grow mouldy, so it is best to dispose of it right away or put it in an airtight container in the fridge. To dispose of oobleck, you can put it in the green bin (compost bin) or the regular garbage.</p>
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Instructions For the Activity

1. Put most of the cornstarch in the bowl. Leave about 3 spoonfuls in the bag.
2. Add 3 spoonfuls of water to the bowl.
3. Stir the mixture. The mixture should not be too runny or dry. The Oobleck is ready when you can squeeze it in your hand and it feels like a solid and then open your hand and it flows like a liquid.
4. If too dry, slowly add small amounts using the pipette. If too wet, add small amounts of cornstarch.

(Optional) Add colour if you want to using the paint from bubble art or food colouring.

How do I know when my oobleck is done?

The Oobleck is ready when you can squeeze it in your hand and it feels like a solid, then open your hand and it flows like a liquid.

Materials

- Corn Starch
- Pipette
- Colour (e.g. Paint or Food Colouring)
- Mixing Bowl
- Water
- Spoon

Videos

Play the video to show your students how to use the pipette.
<https://www.youtube.com/watch?v=bU5nHIL3VIs>

Appendix A

STEM To-Go Activity Sheet - Ooey Goey Oobleck

The Science Behind It All

Use Appendix A as a handout. There are provided illustrations to help further explain the content.

Science doesn't have to be hard - in fact, it can be ooey, goey and loads of fun! Oobleck is a non-Newtonian fluid. We are familiar with Newtonian fluids in our daily lives, which are fluids that have a constant viscosity or ability to flow at a given temperature (think water, vinegar, milk, etc.). A non-Newtonian fluid does not follow the rules! Oobleck acts like a liquid when it is poured but acts like a solid when a force is acting on it. Once you've made the Oobleck, pick some of it up in your hand and hold your fingers apart. It will slide right through your fingers. BUT, if you squeeze it into a ball with your hands, it will hold its shape. Oobleck isn't the only non-Newtonian fluid out there. For instance, ketchup, toothpaste and silly putty are also Non-Newtonian fluids.

Extensions

Grade(s): Grade 2

Curriculum Area: Matter and Energy

Overall Expectation(s)

C2. Exploring and Understanding Concepts

demonstrate an understanding of the properties and physical changes of liquids and solids

Related Specific Expectation(s)

C2.2 describe the properties of liquids and solids

C2.3 describe properties of liquid water and solid water, and identify the conditions that cause changes from one state to the other

C2.4 identify conditions in which the states of liquids and solids remain constant and conditions that can cause their states to change

C2.6 classify solid objects and materials in terms of their buoyancy and in terms of their ability to absorb or repel water

- Quicksand can be used as another non-Newtonian fluid. Try modelling quicksand by making it into a ball over a bowl or sinking your fingers into quicksand. What happens?

Resource: https://www.education.com/activity/article/Quick_Sand/

Resource: <https://www.engineeringemily.com/make-quicksand-steam-activity-for-kids/>



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Extra Resources

Lesson Plan for Oobleck - Lesson Plan & Activity Sheet:

https://www.clenwi.com/file_download/inline/d90eac90-10b1-4eaf-9301-cab0d5baca68

Kidzone - Lesson Plan: <http://www.kidzone.ws/science/cornstarch.htm>

Exploratorium - Science Background: http://www.exploratorium.edu/science_explorer/ooze.html

Science Bob - Lesson Plan: <https://sciencebob.com/oobleck-the-corn-starch-and-water-experiment/>

Bartholomew and the Oobleck by Dr. Seuss

Appendix A: STEM To-Go Activity Sheet - Ooey Goey Oobleck

Activity sheet includes materials, instructions, tips and the science behind this activity.

Ooey Goey Oobleck Activity - Blog Post: <https://www.stemovation.org/post/ooey-goey-oobleck>

Ooey Goey Oobleck Activity Sheet - Student Copy:

https://www.stemovation.org/_files/ugd/8444cc_6e6e30c555c049a2a69f6a052cd01dec.pdf



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STEM TO-GO ACTIVITY

OOEY GOOEY OOBLECK

MATERIALS

- Corn Starch
- Pipette
- Colour (e.g. Paint or Food Colouring)

Find at Home

- Mixing Bowl
- Water
- Spoon

INSTRUCTIONS

1. Put most of the corn starch in the bowl. Leave about 3 spoonfuls in the bag.
2. Add 3 spoonfuls of water to the bowl.
3. Stir the mixture. The mixture should be not too runny or dry. The Oobleck is ready when you can squeeze it in your hand and it feels like a solid and then open your hand and it flows like a liquid.
4. If too dry, slowly add small amounts using the pipette. If too wet, add small amounts of cornstarch.

(Optional) Add colour if you want to using the paint from bubble art or food colouring.



THE SCIENCE BEHIND IT ALL

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- Do not eat oobleck!
- Oobleck can grow mouldy, so it is best to dispose of it right away or put it in an airtight container in the fridge.
- To dispose of oobleck, you can put it in the green bin or the regular garbage.

HOW DO I KNOW WHEN MY OOBLECK IS DONE?

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Watch this video to see how to use the pipette:



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