Blobber

Standard I:

Students will understand that chemical and physical changes occur in matter.

Objective 1:

Describe that matter is neither created nor destroyed even though it may undergo change.

Intended Learning Outcomes:

2. Manifest Scientific Attitudes and Interests.

Content Connections:

Measurement, Prediction, and Data Collection.

Science Standard I

Objective 1

Connections

Background Information

White glue is made up of millions of polymers. When polymers are dissolved like they are in glue they slide around each other letting the glue flow. However, they are so long, that when they flow they get in each other's way making the glue more viscous. Viscous means that glue flows more slowly than water. When you add a borax solution to the glue the polymers change. The borax makes them cross-link or connect to each other like a net. The more tangled the polymers get the more water they trap creating a jelly like feel. Tangled molecules change and are even more difficult to pour. This makes the solution even more viscous than glue. The change that takes place to the polymers by adding the borax solution is a chemical change.

Indicators of a chemical change can be color, a new odor, light or change in heat is given off. When making Blabber two liquids are mixed together forming a precipitate. A precipitate is also an indication that a chemical change has taken place.

Super Science talks about a mistake that paid off, "Try as he might, the chemist James Wright was never able to create rubber in the laboratory. But one of the mistakes did become a very popular toy. When he added boric acid to silicone oil he created a bouncing solid that oozed like a liquid. You probably know it as Silly Putty!" (Pg. 152).

Research Basis

Corcoran, Carol A.; (May-Jun 2004). A teacher's guide to alternative assessment: Taking the first steps. *Clearinghouse,* Volume 77.5, p.213.

Moon, Tonya R., Brighton, Catherine M., Callahan, Carolyn M. & Robinson, Ann; (Winter/Spring 2005). *Development of authentic assessments for the middle school classroom journal of secondary gifted education,* Volume 16.2/3, pp. 119-133, 15p

Materials

- ❑ One tablespoon white glue
- ❑ ½ teaspoon borax
- ❑ ½ cup water
- ❑ Food coloring (Optional)
- ❑ Two paper cups
- ❑ Tablespoons, teaspoons and stirring sticks
- ❑ Scales to measure weight

DeGeorge, Barbara; Santoro, Anne Marie C.C. (Nov-Dec 2004). Manipulative: A hands-on approach to math. *Principal volume* 84 n2 pp.28-28 (Ej693871).January 31, 2006 from http://www.eric.ed.gov

Renwick, Lucille C.C. (Jan-Feb 2004). *Hands-on learning.* Instructor Vol. 113.5 p.9-9, l/2p, le (12403496).January 31, 2006 from http://www.eric.ed.gov

Hands-on learning is critical to students' understanding of science concepts. Research shows that hands-on projects actually help children learn better. Hands-on learning helps students more readily understand concepts and boosts their self-confidence.

Performance Assessment is the collection and evaluation of evidence of student learning, focusing on indicators of meaningful and valuable student progress. This type of assessment asks students to perform, create, produce or do something. It tapes into higher-level thinking and problem-solving skills. It uses tasks that represent meaningful instructional activities involving real world applications and using human judgment to do the scoring.

Invitation to Learn

What happens when you mix glue, and a mixture of borax and water together? Can you bend it, bounce it, and even blow it up like a balloon. Why is it so moldable and flexible?

Instructional Procedures

1. Weigh all ingredients before mixing together.
2. Dissolve the borax in water.
3. Pour the white glue into another cup (optional: food coloring).
4. Add one tablespoon of the borax solution to the glue and stir with a stick or spoon
5. Take the mixture out of the cup and knead it with your hands for several minutes. You've got Blobber.
6. Prepare worksheet and worksheet cards for different recipes. See worksheets provided.
7. On the worksheet, predict, gather data about the Blobber, and draw conclusions as to what happened when the ingredients were combined.

Assessment Suggestions

- Were students able to mix the solution together properly and make Blobber? Were students able to follow worksheet and

complete answers drawing the correct conclusions? Look for evidence that the students understand what glue, water, and borax are and what they become when mixed together.

- Were students able to mix different solution of Blobber together, make predictions, gather data, and draw conclusions using their first mixture of Blobber?

Curriculum Extensions/Adaptations/ integration

- Have students conduct three different Blobber tests using different recipes varying the amount of borax.
- Have students complete worksheet *Comparing Different Recipes.* Predict, gather data about the Blobber, and draw conclusions as to what happened when the borax amount is changed in each recipe and which recipe is the best.
- Red Blobber. Use same recipe however change the amount of borax added to the water. This time add one teaspoon of borax to the one-half cup of water.
- Yellow Blobber. Use same recipe as above.
- Blue Blobber. Use the same recipe, however, change the amount of borax added to the water to one-fourth teaspoon borax.

Family Connections

- This is a fun activity for families to do at home. Ingredients are available in most homes and if not the school can provide borax and glue.
- Warning: Small children should be supervised when using this product. If swallowed, a child could choke on the Blobber.

Additional Resources

Books

Super Science Concoctions, by Jill Frankel Hauser; ISBN 1-885593-02-3

Aims Chemistry Matters, ISBN 1-932093-03-6

What Can My Blobber Do?

1. Use a meter stick and see how high your Blobber bounces when dropped from different heights. Record your data.

Drop Blobber from 150 cm	Drop Blobber from 100 cm	Drop Blobber from 50 cm

2. Roll your Blobber into a ball and set it on you desk. Watch what happens to your Blobber over a four minutes period.

1 minute	2 minutes	3 minutes	4 minutes

3. Does your Blobber keep its shape or does it start to flatten out? What do you think is happening?

4. Roll your Blobber into a ball again. Use a paperclip to make an imprint in it. How long does your imprint last? What happened and why?

5. Roll your Blobber into a rope and stretch it until it breaks. Record how long your Blobber was when it broke.

10 cm	20cm	30cm	40cm

6. What conclusions can you draw from the stretch test?

7. Write a secret message on a white piece of paper with a number two pencil. Write over this message once more to make it dark. Press your Blobber over the message and see what happens. Why do you think this happens?

Recipes for Extensions

Yellow Blobber

- 1 tablespoon white glue
- ½ teaspoon borax
- ½ cup water
- Food coloring optional
- 2 paper cups
- tablespoons, teaspoons, and stirring sticks
- scales to measure weight

Dissolve the borax in water. Pour the white glue into another cup. (optional: food coloring) Add 1 tablespoon of the borax solution to the glue and stir with a stick or spoon. Take the mixture out of the cup and knead it with your hands for several minutes. You've got Blabber.

Red Blobber

Use same recipe however change the amount of borax added to the water. This time add 1 teaspoon of borax to the ½ cup of water.

- 1 tablespoon white glue
- 1 teaspoon borax
- ½ cup water
- Food coloring Optional
- 2 paper cups
- tablespoons, teaspoons, and stirring sticks

dissolve the borax in water.
Pour the white glue into another cup. (optional: food coloring) Add 1 tablespoon of the borax solution to the glue and stir with a stick or spoon. Take the mixture out of the cup and knead it with your hands for several minutes. You've got Blabber.

Blue Blobber

Use the same recipe, however, change the amount of borax added to the water to ½ teaspoon borax .

- 1 tablespoon white glue
- ½ teaspoon borax
- ¼ cup water
- Food coloring Optional
- 2 paper cups
- tablespoons, teaspoons, and stirring sticks

Dissolve the borax in water. Pour the white glue into another cup. (optional: food coloring) Add 1 tablespoon of the borax solution to the glue and stir with a stick or spoon. Take the mixture out of the cup and knead it with your hands for several minutes. You've got Blabber.

Comparing Different Recipes

Collect and record your data from each recipe.	Yellow Recipe	Red Recipe	Blue Recipe
Bounce Test			
Roll Blobber into a ball. How long does it stay in a ball?			
Roll Blobber into a ball again. This time press a paper clip into the ball. How long does the imprint last?			
Which Blobber stretches the best?			
Print transfer test with secret message.			

Which recipe would you use for your product? Why?

_____

_____

_____

Blobber Ad

Design a newspaper or magazine ad that you would use to sell your product.
Use the properties of Blobber in your ad to get the audience excited about buying your product.

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