

### **Leapfrog Program Week 3 Course Title: Sticky Icky**

#### **Course Description**

Crawling geckos seem to stick to walls like mortar sticks to bricks. In this course students explore things that stick. Testing everyday objects, such as tape, cement and glue, students learn about what makes something adhere, or stick, to something else. Deductive reasoning and creative thinking skills are developed as students apply their understandings of molecules, forces, and chemical reactions to create bonds between materials. As a final project, groups will compete to see who can create the strongest bond that lasts the longest!

#### **Essential Questions**

- What are the benefits of the scientific method?
- When is one thing sticking to another thing a benefit and when is it a problem?
- What are the similarities and differences between things that stick together in nature and human-made adhesives?
- What adhesives do people need that haven't yet been invented?

#### **Outcomes**

Upon successful completion of this course, students will have:

- a. Defined the scientific process and the terms *adhesive*, *bond*, and *force*
- b. Asked questions about what makes things sticky, in nature and in man-made materials
- c. Researched and discussed the concepts identified in our questions
- d. Constructed hypotheses regarding natural and man-made adhesives
- e. Tested our hypotheses with experiments creating and using a variety of adhesive substances
- f. Recorded data and observations through writing, dictation, drawing, and creating charts and tables
- g. Analyzed results and drawn conclusions
- h. Created a final project that involves bonding two or more items and demonstrates knowledge of what makes something adhere to something else

#### **Instructional Strategies**

There will be various instructional strategies that will be utilized during this week. Each class will begin with direct instruction where the instructor will introduce students to key vocabulary words, information and processes needed for them to be successful in each class. Students will also be grouped with their peers based on the pre-assessments that were given at the beginning of class to insure that all students are being challenged to their highest level. These groups will also intertwine throughout the course so that students will challenge one another.

The other instructional strategies that will be utilized during this class will be hands-on experimentation, independent research, graphic organizers and other various instructional strategies. These strategies will be used to accelerate and challenge student learning.

## Resources and Materials

- **Books:**
  - a. *The Icky, Sticky and Gross Fascinating Factbook*. Written by: Leslie Johnstone Shar Levine. Mud Piddle Books (2008). ISBN-13: 978-1603111454
  - b. *Icky Sticky Foamy Slimy Ooey Gooey Chemistry Book*. Written by: Kristine Petterson. Scholastic (July 1997). ISBN-13: 978-0590360432.
  - c. *Science Dictionary for Kids: The Essential Guide to Science Terms, Concepts, and Strategies*. Written by: Laurie E. Westphal. Prufrock Press (July 1, 2009). ISBN-13: 978-1593633790
- **Web sites**
  - a. <http://www.msichicago.org/>
  - b. <http://www.adhesives.org/TrainingEducation/StudentResources.aspx>
  - c. [http://www.adhesivesmag.com/Articles/Adhesives\\_in\\_the\\_News](http://www.adhesivesmag.com/Articles/Adhesives_in_the_News)
- **Materials**
  - a. Please refer to the Leapfrog Supply List for instructions about what supplies must be brought to class each day.

## Student Assessment

- **Pre-Assessment**  
The pre-assessment that will be used will be a pre-test for the students and also a K.W. chart (Know and Want to Know). These pre-assessments will allow the instructor to assess what students already know and what they need to know. This information will be used to guide the course.
- **Documentation of Learning**  
There will be various documentations throughout the course. Students will be involved in group experimentation, debates, research and use of the benefits of the scientific method.
- **Post-Assessment:**  
The students post assessment will be displayed on the final day of class at the *EXPO*. Students will present parents with a poster presentation that will contain the research that they have conducted throughout the week on the various adhesives that have studied.

## Schedule

| Date          | Topic(s)                              | In-class Activities   | How will you document learning for assessment?  |
|---------------|---------------------------------------|---|---|
| July 25, 2011 | Introductions<br>Sticky situation lab | Students will be introduced to the course through the creation of a K.W. chart.<br>The basics of the scientific method will also be covered through an experiment with various adhesives.       | Learning will be assessed through the lab packet that will be completed by the students.  |
| July 26, 2011 | Natural Vs. Man-made adhesives        | Where are natural adhesives found? Also, how do man-made adhesives help society? Students will answer questions like this during a research and debate session with their peers.                | Learning will be documented through the debate that the students have with one another and the research information sheet that will be completed. |
| July 27, 2011 | Sticky Icky Experiments               | Students will make their own adhesive today. While creating this adhesive students will make observations and conduct various experiments that will allow for the use of the scientific method. | Learning will be assessed through the completion of various experiments using the scientific method to guide learning.                            |

| Date          | Topic(s)           | In-class Activities   | How will you document learning for assessment?   |
|---------------|--------------------|---|--|
| July 28, 2011 | Wrapping it all up | Today's course will be wrapped up by the students' creation of an EXPO poster board explaining their findings on various adhesives.   | Learning will be assessed through the creation of the students EXPO board and their summary of the course. |
| July 29, 2011 | EXPO Day!          | Today students will present their poster presentation to their parents. Student's presentations will present the information that they have learned throughout the week about adhesives. Students will also present the adhesive that they have created to their parents. | Learning will be assessed through the poster presentation that the students have created.                  |

**CTD Statement on Third-Party Web Sites**

Instructors are required to thoroughly review any third-party web sites they intend to use in their courses for inappropriate content. However, because web content continuously changes, CTD disclaims any responsibility for any of the content contained on third-party web sites used in course materials. If you become aware of anything that may be inappropriate, please notify CTD staff immediately.

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