Theme:
This is a science unit focusing on Joanna Cole’s Magic School Bus books. Since science is not currently on ISTEP testing, this subject area is many times overlooked. I wanted to create a unit that would tie in science concepts with literature.

Books:
“The Magic School Bus Inside the Human Body” by Joanna Cole
“The Magic School Bus Gets Baked in a Cake” by Joanna Cole
“The Magic School Bus Lost in Space” by Joanna Cole
“The Magic School Bus and the Electric Field Trip” by Joanna Cole

Other Resources:
* This website deals with the science and safety of electricity.
  http://www.sce.com/kidsscience/more/electricity_gen.html

* This book examines the different parts of the body and how they work.
  “Your Insides” by Joanna Cole

* This website examines outer space.
  http://www.kidsastronomy.com/index.htm

Academic Standards:
Language Arts:
4.5.1 Write narratives (stories) that:
   1 include ideas, observations, or memories of an event or experience.
   2 provide a context to allow the reader to imagine the world of the event or experience.
   3 use concrete sensory details.

Math:
4.2.8 Add and subtract simple fractions with different denominators, using objects or pictures.
   Example: Use a picture of a circle divided into 6 equal pieces to find $\frac{5}{6} - \frac{1}{2}$.

Science:
4.3.15 Demonstrate that without touching them, a magnet pulls all things made of iron and either pushes or pulls other magnets.

4.3.16 Investigate and describe that without touching them, material that has been electrically charged pulls all other materials and may either push or pull other charged material.

4.4.1 Investigate, such as by using microscopes, to see that living things are made mostly of cells.
Objectives:
1. Students will develop a love for exploring science ideas and concepts.

2. Students will recognize that carbon dioxide is the result of the reaction between baking soda and vinegar.

3. Students will be able to use their imagination along with their knowledge of science to create a science fiction short story.

4. Students will understand that living things are made mostly of cells.

5. Students will understand simple concepts of electricity.

Grouping:
I will group the students into 4 buses with approximately 6 students in each bus. Each bus will be focusing on a particular book on a different day at the centers. Some of the activities at the centers require the whole bus to work together as a team. Other activities require them to work in pairs or individually. I will allow them to chose their partners within their group for the paired activities, unless a problem develops.

Bus Time Schedule:

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<td>Opening Activity</td>
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Lit Focus Unit  Maple-2
Opening Activity:
Lead a class discussion over what the students know about science. Have them individually create a word poster with the word science in the center and a collage of items that remind them of science circling the word. They may either cut out pictures from magazines or draw items for their poster.

Multiple Intelligences used: Visual/Spatial, Naturalist, Verbal/Linguistic

Centers:
Each bus will have two days to complete their tasks at each destination. They will work individually on each activity unless otherwise specified.

Destination 1: Inside the Human Body
Activities:
- The whole bus group works together to create a model brain out of play dough. They must label the different parts of the brain by using a toothpick and attaching a small piece of paper to it with the name of the part. They may use the book as a guide.
  Multiple Intelligence used: Visual/Spatial, Logical/Mathematical, Interpersonal

- Have the students draw their favorite organ. At the bottom of the page, they must list the function of this organ and why it is their favorite organ.
  Multiple Intelligence used: Intrapersonal, Visual/Spatial, Verbal/Linguistic

- Have the students take a swab sample of the cells from the inside of their mouth by using a toothpick. Have them stir the end of the toothpick in a drop of water on a slide. Then, add a drop of iodine solution to color the cells. Look at the slide under a microscope. On a piece of paper have students sketch and describe what they observe. (I got this idea from “The Magic School Bus Inside the
Human Body.”
Multiple Intelligence used: Naturalistic, Intrapersonal, Visual/Spatial, Verbal/Linguistic

Destination 2: In a Cake
Activities:
- In groups of two, have students complete this experiment: Have students fill a pitcher with water. Then, add three teaspoons of white vinegar and two teaspoons of baking soda. Next, drop in five to six salted peanuts. Have them record what they saw and why they think it happened. The baking soda and vinegar make a chemical reaction causing carbon dioxide bubbles. The bubbles will cling to the peanuts, lifting them to the top of the pitcher. Once they reach the top, the bubbles break, allowing the peanuts to sink. The peanuts will continue to go up and down in this manner. (I found this experiment in “The Magic School Bus Gets Baked in a Cake.”)  
  Multiple Intelligence used: Visual/Spatial, Verbal/Linguistic, Interpersonal, Logical/Mathematical

- In groups of two, have students put baking soda and vinegar into a glass beaker. Have them place a balloon over the opening of the beaker. Have them draw and record what happens. They should notice that the carbon dioxide created from the reaction is filling up the balloon. (I found this experiment in “The Magic School Bus Gets Baked in a Cake.”)  
  Multiple Intelligence used: Visual/Spatial, interpersonal, Verbal/Linguistic

- Have measuring cups and ingredients for the students to practice their fractions. Have a list of things they must measure. Give them a activities sheet that has them solve math problems about the fractions from measuring. Example: $\frac{1}{2}$ cup of flour + $\frac{1}{3}$ cup of flour = $\frac{5}{6}$ cups of flour.  
  Multiple Intelligence used: Logical/Mathematical, Visual/Spatial

Destination 3: Lost in Space
Activities:
- Have students make three of their own constellations. Each constellation must have at least 5 stars in it. They must create a name for each constellation.  
  Multiple Intelligence used: Naturalistic, Visual/Spatial, Logical/Mathematical

- Have the whole bus group create a model of our solar system. The materials they will have available to them include stereo foam balls, paint, construction paper, toothpicks, and coat hangers.  
  Multiple Intelligence used: Naturalistic, Interpersonal, Visual/Spatial

- The students must choose a planet they would like to visit. Using the
information from the book along with their imagination, the students will write a short story about their visit to one of the planets. Encourage them to be as descriptive as possible.

Multiple Intelligence used: Intrapersonal, Verbal/Linguistic, Naturalistic

Destination 4: The Electric Field

Activities:

• In groups of two, have students create a billboard design warning people about electrical safety. Remind them to include some of the safety tips from the Magic School Bus book.
  Multiple Intelligences used: Verbal/linguistic, Interpersonal, Visual/Spatial

• Have students cut and decorate a 12 inch worm from tissue paper. Lay on a flat surface. Rub a plastic ruler with a piece of silk or wool to move the ruler's electrons. Pass the ruler, with varying movements, over the worm. The worm will "dance" because of the static electricity. (I found this idea on this website: http://www.liverpool.k12.ny.us/standards/lstandards/curriculum/sci/g4sci/4-scicurric.html#top)
  Multiple Intelligences used: Visual/Spatial, Logical/Mathematical

• Have students construct an electromagnet by wrapping several coils of copper wire around a large iron nail. Connect the ends of the wire to a D-cell battery. Experiment picking up small iron filings or paper clips, with the tip of the nail. (I found this idea on this website: http://www.liverpool.k12.ny.us/standards/lstandards/curriculum/sci/g4sci/4-scicurric.html#top)
  Multiple Intelligences used: Logical/Mathematical, Visual/Spatial

Closing Activity:
Have students brainstorm about the next science topic Joanna Cole should focus on for her next Magic School Bus book. Have students write Cole a letter about their proposal.
Bloom’s Taxonomy

Knowledge:
Can you list the parts of the brain?

Comprehension:
Can you explain what is happening when the peanuts are constantly going up and down in the pitcher of water? (This question is in relation to the floating peanut experiment.)

Application:
What examples can you find to show your understanding of static electricity?

Analysis:
What is the relationship between the large iron nail and the small iron filings? (This question is in reference to the electromagnet experiment.)

Synthesis:
Besides the two experiments you conducted, can you think of an original way to show carbon dioxide is the result of the reaction between baking soda and vinegar?

Evaluation:
Assess the value or importance of electrical safety. Why is it important?
Checklist for the Magic School Bus Unit

Name: _____________________  Date: _________________________

Student’s Check

1. Make word poster around the word science.  _______
2. With a buddy read “The Magic School Bus Inside the Human Body.”  _______
3. Make a model brain.  _______
4. Complete your favorite organ activity.  _______
5. Complete cell experiment.  _______
6. With a buddy read “The Magic School Bus Gets Baked in a Cake.”  _______
7. Complete and record results from the floating peanut experiment.  _______
8. Complete and record results from balloon Experiment.  _______
9. Fill out the measuring activities sheet.  _______
11. Create three constellations.  _______
12. Make a model of our solar system.  _______
13. Write a short story about a trip to one of the planets.  _______
15. Create a billboard design warning people about electrical safety.  _______
16. Make a static dancing worm.  _______

Teacher’s Check
17. Construct an electromagnet.

18. Write a letter to Joanna Cole.