MISSION QUITE POSSIBLE

LEARNING GAME

INTRODUCTION

Kids love a challenge, especially ones where they find the solution. This activity challenges kids to separate a mixture using a few tools.

LEARNING OBJECTIVE

Students will be able to observe, form hypotheses, and carry out experiments.

MIXTURE

In a large, sealable plastic bag, mix:

- 1 part iron filings (available at the hardware store)
- 1 part sunflower seeds
- 1 part small pebbles
- 3 parts sand

MATERIALS

- Magnets
- Screens or hand held strainers (available at grocery or hardware stores)
- Spoons
- Paper, pens and pencils
- Chart paper
- Sealable, plastic bags
- Paper plates
- Mixture

PREPARING FOR THE ACTIVITY

1. Combine the mixture ingredients. Make sure to shake and mix the contents of the bag so that everything is evenly distributed.
2. Place a small amount (2tbs. to a handful) of the mixture into plastic bags and seal them.
3. Give each team of 2-4 students their own bag.
4. Arrange the tools—magnets, spoons, screens or hand-held strainers—on a table where the kids can access them.

ACTIVITY

Introduction

1. **Ask:** "What do scientists do when they try to figure out a problem?"
2. Write down student responses on a large piece paper.
    - Include things like they look carefully (observation), come up with ideas (hypotheses), and test them out (experiment).
3. Distribute the plastic bags of the mixture and the paper plates. Tell the students to wait to open the bag.

Observing the mixture

1. **Say:** "Let's pretend we're scientists. Look carefully and describe the mixture I just gave you. You are not allowed to open the bag yet. Write
2. Bring the group back together to share what they observed.

Forming hypotheses

1. **Say:** "Our challenge is to separate the mixture into different piles. How could we do that?"
2. Show students the tools that you have to help separate the mixture.
3. **Ask:** "How could we use the tools to help us separate the mixture?"
4. Chart their responses.

Experimenting

1. **Say:** "Your task is to try to separate the mixture into different piles on the paper plates. You can only use the tools on the table."
2. Give students time to separate the materials.
3. **Debrief:** "What piles did your group separate the mixture into and why?"
4. **Discuss:** "The role of a scientist is to make observations, form ideas, and then test those ideas. Explain how we were scientists in this activity."

VARIATIONS AND EXTENSIONS

- **Discuss the concept of a mixture in more detail and how it exists in chemistry, cooking, etc. Check out Chem4kids! (http://www.chem4kids.com/files/matter_mixture.html) for a kid-friendly resource about mixtures.**
- **Introduce or re-enforce magnets and magnetism with this activity. Check out Physics4Kids! (http://www.physics4kids.com/index.html), Kids Science Experiment (http://www.kids-science-experiments.com/magneticmaterialfacts.html) or Bill Nye.com (http://www.billnye.com/episodes/pdf/episodeguide21.pdf) for kid friendly resources for talking about magnetism.**