

1-13-2015

## Theme B: Day 1 Plan

Purdue University College of Education

Follow this and additional works at: <http://docs.lib.purdue.edu/swresources>

---

### Recommended Citation

Purdue University College of Education, "Theme B: Day 1 Plan" (2015). *“Becoming a Spacewalker: My Journey to the Stars” Teacher Resources*. Paper 13.  
<http://docs.lib.purdue.edu/swresources/13>

This document has been made available through Purdue e-Pubs, a service of the Purdue University Libraries. Please contact [epubs@purdue.edu](mailto:epubs@purdue.edu) for additional information.

## THEME B

*Becoming a Spacewalker: My Journey to the Stars* by Astronaut Jerry L. Ross

### DAY ONE STEM EXTENSION TO ACCOMPANY DAY ONE INTERACTIVE READ ALOUD

**To Ponder:** In the story “*Kid Stuff*,” Jerry Ross told us that he loved the sensation of swinging. He would pump his legs to propel the swing higher and higher. Then he would leap out of the swing. At that moment, he thought that maybe it felt like flying. But, he didn’t fly away. A force pulled him back to earth. What was that force? Now watch while I bounce this basketball. (Dribble the ball a few times while the children watch.) What force keeps the ball from bouncing up and away?

#### SCIENCE/TECHNOLOGY/ENGINEERING/MATHEMATICS (STEM) ACTIVITIES:

**Science Investigation:** We will explore a bouncing basketball—a 3-D sphere—and how push and pull forces act upon a bouncing ball.

**Vocabulary:** sound, sight, force, bounce, gravity, weight

**Goal:** To develop an understanding of what happens when a basketball bounces and the impact gravity has on the ball when it is dropped or pushed.

**Purpose of Science Activity:** To examine a basketball in its potential energy state. Then, apply a force (push) to the basketball (kinetic energy). While watching and listening to the bouncing ball, investigate what happens. Investigate what happens to the basketball when it is no longer bouncing? What direction does it travel when bouncing? Discuss what was heard and seen. Teacher records student observations on chart paper in sequential order. The teacher models note taking or illustrates on chart paper and records student observations and posts chart for future student reference.

**Materials:** basketball, chart paper, marker, scale

#### Before Activity:

- **Activate prior knowledge:** What do we know about a basketball? A basketball is just a ball until a force acts upon it. It is a 3-D sphere.
- **Prompts to encourage prediction:** Using our sense of hearing and sight, what do you think the basketball will sound like and look like when bounced?
- **Draw on personal experience:** From your experience shooting hoops, what happens when applying a push to the basketball? Is the push always the same? Is the same amount of push applied each time? What happens when a basketball is dropped from a certain height?
- **Set a purpose for experiment:** To explore a force (push or drop) on a basketball
- **Draw or write prediction for each object in science notebook or use graph:** After discussing with students, model note-taking strategies for your students by making a list of student observations on chart paper in word and/or picture form. Display chart paper in classroom for future reference.

**During Activity:**

1. Educator holds basketball in hand(s) and expresses science objective, which is to develop an understanding of what happens in making a basketball bounce (drop or push).
2. Discuss prior student knowledge about basketball.
3. Educator holding basketball represents potential energy.
4. Educator drops (force) basketball and discusses observations (kinetic energy).
5. Educator applies force (push) to the basketball and again discusses observations (emphasizing senses of hearing and sight).
6. Teacher asks what direction(s) the ball is bouncing in and investigates what happens when the basketball is inactive.
7. Educator further investigates basketball by asking students how much they think the basketball weighs. Listen and record student predictions. Utilizing a scale, weigh the basketball, and record its weight on chart paper in lb/kg.
8. Notes and note-taking/science journaling: Educator modeling first time for students to ensure scientific process journaling expectations and for future student record-keeping in science journal/iPad. Teacher reviews science investigation and student findings, emphasizing: (1) *The evidence shows that . . .* (2) *My conclusions are . . .* (3) *Reflections*, and final thoughts. Teacher records notes in written form and illustrates data on chart paper. Teacher displays chart(s) in classroom for future student reference.

**After Activity: What does your evidence show?**

- *The bouncing basketball evidence showed that* \_\_\_\_\_.
- *My conclusions about the bouncing basketball* \_\_\_\_\_.
- *Reflections:* At night, Jerry Ross positioned himself to look up to the nighttime sky. Even in his dreams, he came back down to earth. Just like the bouncing basketball, there is a force that brings all things down to earth. That force is \_\_\_\_\_.

**Extensions:** To investigate gravity and space.

**Resources:**

Tell Me a Story Jerry Ross—What Was I Thinking?

<https://www.youtube.com/watch?v=NTWWOfyObo8>

What is gravity really?

<http://spaceplace.nasa.gov/what-is-gravity/en/>