Lesson Plan

TeachHUB.com

Free Fall

By: Lamont Moore
Director of Testing, Accountability, Gifted Education, and Title III; Ed.D. in Educational Leadership, Gardner-Webb University, NC

Science
Grades 9–12

Introduction

Students will engage in experiments to gather and analyze data.

Learning Objectives

Students will:

- (CCSS.ELA-Literacy.RST.9-10.3) Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

Materials Needed

- Meter or yard stick
- Stop watch
- Several hand held items of different sizes, shapes, and weights (i.e. baseball, golf ball, tennis ball, feather, pencil, pen, crayon, etc.)
- Data recording sheet or chart
- Glue, tape, scrap paper, and materials

Procedure

1. Prior to this lesson make sure that you have the materials prepared for students to easily access. The materials include the following: meter/yard stick, stop watch, hand held items and data recording sheet/chart.
2. Do a quick mini-lesson regarding density and velocity to review these concepts or to introduce them depending on the prior knowledge of your students. The students will need to understand these two concepts and how they relate.
3. Divide the students into groups of 3 and provide each group with the needed materials as listed above.
4. Explain to the students that they will be engaging in free fall experiments. Each of the handheld items will be held 1 yard (or meter) above the floor and will be dropped to the floor. The students will use a timer to capture the amount of time it took the items to land on the floor. The data will be recorded on the data sheet or chart that you will provide or have the students create in their science journals.

Continued on page 2

Free Fall

By: Lamont Moore
Director of Testing, Accountability, Gifted Education, and Title III; Ed.D. in Educational Leadership, Gardner-Webb University, NC

Science
Grades 9–12

Continued from page 1

5. Prior to starting the free fall experiments, have the students to predict (as a group) the amount of time they believe each hand held item will take to land.
6. After the students complete the free fall experiments, they are to review and analyze the data by determining any patterns, identifying the fastest and slowest free falling objects, and discussing how their predictions compared to the actual free fall times of each object.
7. Challenge the students by giving them the task of increasing the amount of free fall time for the hand held objects by modifying their design. The students may use the glue, tape and scrap paper/materials to modify the design of the hand held items in an effort to increase the amount of time that it would take for the object to free fall. This may mean creating “wings” or other parts to attach to the hand held objects to slow down their free fall.
8. Students will then make predictions and then start the free fall experiments again with the modified designs.
9. Students will chart and analyze their data again to determine if they were successful.

Evaluation

The data charts created should provide evaluation of this lesson. You may also want to create rubrics to evaluate how well the groups collaborated and executed the directions. If rubrics are created, they should evaluate the level of active participation of each group member, how well the group follows directions, and the quality of their work. It is advised to review these rubrics with the students prior to starting the station rotations.