

**Teaching English Across the Content Areas:  
Science—Newton’s Three Laws of Motion  
Thematic Lesson Plan: SCIENCE  
Shannon Browne and Bernadette López-Fitzsimmons**

**Science Lesson**

Theme: Newton’s Three Laws of Motion

Topic: Newton’s Third Law of Motion

Target: 12<sup>th</sup> grade intermediate proficiency level

Rationale: This is a 12<sup>th</sup> grade physics lesson. This is the third lesson of a unit. In previous lessons, students had learned about the first two laws of motion and their importance in physics.

Focus Skill: Speaking

Content Area: Physical Science

Standards Addressed: RST.11-12.2; RST.11-12.4; RST.11-12.8; WHST.11-12.4

Language Objective: Students will be able to (SWBAT) use sequence words in their oral presentations proving Newton’s Third Law of Motion.

Instructional Objective: SWBAT create an experiment that can be used to prove the Third Law of Motion.

Key Vocabulary: motion, opposite, equal, reaction, inertia, velocity, acceleration, gravity, force, vectors, friction.

Materials: pen, paper, medicine balls, textbook.

Motivation:

Students will be asked to call upon prior knowledge of the previous two Laws of Motion that were introduced in the first and second lessons of this unit. The teacher will explain that today they are going to learn about the Third Law of Motion.

The teacher will ask two students to come of the front of the class. She will give both students a small medicine ball and ask them to roll the balls toward each other so that the balls can hit each other.

The teacher will conduct a discussion asking the students to describe what happened when the balls hit each other. She will start the discussion using sequence words by asking

- ✓ *What happened first?*
- ✓ *Then what happened? (and so on....)*

**Procedure:**

The teacher will describe the way the balls rolled toward each other, hit each other. Upon impact the balls rolled backwards, demonstrating Newton's Third Law of Motion.

The teacher will state that the Third Law of Motion is "*For every action, there is an opposite and equal reaction.*" The teacher will ask students *to turn and talk* about what this Law actually means.

The teacher will call on students to explain what they think the law means. The teacher will then give real life examples of the Third Law of Motion, such as when you are in a car and you brake hard, your body moves forward. Another example is on a roller coaster; as the coaster jerks forward, you are pushed back.

The teacher will explain these examples using sequence words.

- ✓ First, the roller coaster will build pressure.
- ✓ Next, it will shoot forward.
- ✓ Then, my body will be pushed back into the seat.

The teacher will ask students if they can think of examples found in sports. The teacher will put the students into heterogeneous groups of 3 or 4 and ask them to create an experiment that they could conduct to prove Newton's Third Law of Motion.

The teacher will ask students to briefly explain their experiment using sequence words, such as first, then, last. Students will write the experiment and then present it in appropriate order.

**Assessment**

Students will use prior knowledge to explain the first two Laws of Motion.

The students will discuss what happened to the medicine balls upon impact using *sequence words*. The students will talk to each other to discuss what the third Law means.

Students will work together to come up with examples of the Third Law in sports.

Students will create an experiment that can be done to prove the Third Law. The procedure will be explained in order using *sequence words*.

Students *will write* the procedure of the experiment using sequence words. The *written procedure* will reinforce the linguistic objective which is to use *sequence words*.