

Student Directions: *Faraday's #2 using Faraday Law (Flash) and Electromagnet Lab(Java):*  
Induction

Learning Goals:

Students will be able to:

- Identify equipment and conditions that produce induction
- Predict how the current will change when the conditions are varied.
- Compare and contrast how both a light bulb and voltmeter can be used to show characteristics of the induced current.
- Explain practical applications of Faraday's Law
- Explain what is the cause of the induction

**Directions:**

[http://phet.colorado.edu/simulations/index.php?cat=Electricity\\_Magnets\\_and\\_Circuits&st=-1](http://phet.colorado.edu/simulations/index.php?cat=Electricity_Magnets_and_Circuits&st=-1)

1. Open the *Faraday Law* simulation and discover what you can about induction. Make a list of ways to cause induction.
2. What made you think that induction had occurred?
3. Open *Faraday's Electromagnet Lab*. Investigate using the window called *Pickup Coil*. See if you can discover more things that effect induction and add them to your list.
4. In this simulation, there is another way to show that induction is happening. Explain why this method may not have been used in the simpler simulation.
5. Describe in your own words what induction means.
6. Write a comparative paragraph to meet the third learning goal. Make sure to consider the strengths and weaknesses of each as an indicator of current.
7. Design an experiment to determine how the size and direction of the induced current will change when the conditions are varied. Collect data, make observations and record your information in a table.
8. Write a summary that demonstrates that you can meet the first two learning goals.
9. The magnet is not touching the electrons, yet something is causing them to move. Explain what you think is happening.