

Target Lab Discussion

Bob Becker Target Labs



Introduction

Many labs are designed to confirm something someone has already found. Target labs are more engaging, encouraging the students to apply what has been learned, make predictions, and then test those predictions. Their grades are determined by the results, not by the teacher!

Concepts

- Nature of science
- Scientific inquiry
- Scientific method

Discussion

Instructors use a variety of methods to teach or reinforce a concept, including hands-on laboratory activities. Below are examples of two ways to do the same lab—one more conventional and the other using the “target” method.

Conventional Method

Imagine a physics class learning about Newton’s law of gravity and projectile motion. A ramp is set up on the lab bench and the students allow a toy car to roll down the ramp, off the bench, and land on the floor. They make the necessary measurements, collect data, and do the calculations to confirm that the law of gravity works for projectiles.

Target Method

Before ever rolling the car down the ramp, students take the necessary measurements and calculate where the car should land when launched from a particular height on the ramp. The instructor makes boxes (one for each student group) that have seven compartments. The center section is marked “A,” the two on either side of center are marked “B,” the next two “C,” and the outermost sections are marked “D.” (Outside the box is “F.”) Once the students have predicted where the car should land, they position their box on the floor so the “A” section is in the same place as their calculated distance. Excitement builds as they set the car in place, ready to launch it down the ramp. Imagine the celebration and high-fives when the car lands in the A section, and that is the grade they earn! If the car lands elsewhere, students want to figure out why and what adjustments need to be made, and if time permits, they do so.

Target labs may be done in chemistry classes, also. For example, have students predict how much gas will be produced during a chemical reaction. The quantity of reactants may vary among students groups so each prediction is unique. Target labs take no more time to set up than conventional labs, just a little creativity on the teacher’s part to determine just how to adapt a lab to the target method. The percentage of error allowed is also up to the instructor. The students know ahead of time what the acceptable range is, so their grades are very objective. Since the students have a vested interest in the results, they are very careful with their measurements and calculations. The science concepts really “come to life,” as they observe the experiment with eager anticipation.

Target labs are a type of structured inquiry activities with a twist—instead of following the prescribed procedure and simply recording the results, students determine the results ahead of time and then test the hypothesis. For greater student engagement and success, try a target lab!

Flinn Scientific—Teaching Chemistry™ eLearning Video Series

A video of *Target Lab Discussion*, presented by Bob Becker, is available in *Bob Becker Target Labs*, part of Flinn Scientific—Teaching Chemistry eLearning Video Series.