

Sample Lesson 4: High School Physics

Galileo and Pendulums

Brooke Strasser uses Reading for Meaning in her physics classes to help her students understand challenging concepts and texts. Today she is using the strategy for a lesson on the mathematical principles and scientific forces involved in the swing of a pendulum. Brooke begins her lesson with a mini-demonstration: she sets two different pendulums in motion, one with a long string and one with a short string. She asks students to observe each pendulum and record any differences they note in the behavior of each.

Next, Brooke distributes a Reading for Meaning organizer with five statements (see Figure 2.5). She asks students to use both their background knowledge and their observations from the mini-demonstration to decide whether they agree or disagree with each statement.⁹

Figure 2.5 Reading for Meaning Organizer for Physics

Agree	Mathematics is a tool that scientists use to explain things.		Disagree
	Support	Refute	
	Observing is more than looking.		
	Support	Refute	
	The weight of a pendulum has a direct effect on the periods of the pendulum's swing.		
	Support	Refute	
	The time it takes for one swing of a pendulum is a result of the pendulum's length: the longer the length, the faster the swing.		
	Support	Refute	

Figure 2.5 (continued)

Agree	For every second it takes a pendulum to swing back and forth, the length of the pendulum is equal to a number the square of the time.		Disagree
	Support	Refute	

Students then gather into small groups to read about Galileo and the observations and discoveries he made while working with pendulums. Students collect evidence to either support or refute each statement. Brooke also allows students to go to her desk and experiment with the two pendulums she used for her mini-demonstration. As she walks around the room, Brooke overhears students discussing their amazement over the fact that the weight of a pendulum has no direct effect on the periods of its swing. Another group comments on how experimenting with the pendulums made the reading much easier to understand.

Brooke gathers her students so that they can recap their findings, reflect on their initial hypotheses, and note how their ideas have changed or been confirmed as a result of reading and experimenting. For homework, Brooke asks students to examine the three different graphs shown in Figure 2.6. Students must choose the graph that best depicts what Galileo discovered about the behavior of pendulums and include a justification for their choice.

Figure 2.6 Which Graph Depicts Galileo's Discovery About Pendulums?

