

Learner objectives:

- (1) Given a distance/time graph, students will be able to properly compute the instantaneous speed and average speed of an object using data from the graph with 90% accuracy.
- (2) Using a marble and a ruler, students will collect distance and time data in order to construct their own distance time graph at a proficient level that is defined by a scoring guide.
- (3) Given a list of 10 word problems, students will compute either speed, distance, or time with 90% accuracy.
- (4) Given a distance/time graph, students will be able to describe the motion of the object with complete accuracy.
- (5) After analyzing two pictures, students will be able to describe the motion between the two pictures using a point of reference with complete accuracy.

Background:

The learning context for applying Sakai is a unit of instruction for an 8th grade science class that is delivered completely online. The unit objectives are outlined by the Missouri Department of Elementary and Secondary Education Grade Level Expectations. The topic is motion, specifically interpreting distance/time graphs and computing the speed of an object. The topic of motion is the beginning concept that students will apply when learning Newton's Laws of Motion.

Learner Description:

The learner is a 13-15 year old 8th grade student. Typically, 8th grade students come to my class with a basic knowledge of science. These students have had a dedicated science time since 5th grade. Their experiences with learning science are more book-related. It is important to have students "do science". I think I will use a Chinese proverb "Tell me and I'll forget; show me and I may remember; involve me and I'll understand." There is a reason that the proverb has lasted, research has supported it. If you want students to understand, they need experiences to relate their learning to.

Theoretical Framework:

The theoretical framework for the unit is inquiry-based learning. Learners will be provided with scientific-like or authentic problems in Motion. From there, learners will generate hypothesis, gather information, and provide solutions, action plans, recommendations, and interpretations of the situation.