**Vernier Labquest Extension Investigation**

**Grade 7 Kit: FOSS Force and Motion Investigation**

**Title of investigation:** Speed going up and down a hill

**Guiding Question:** How does the speed of the car change on a curved (downhill then uphill) track?

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**Summary of activity:** Related to all seven physical science standards 7.1.1 to 7.1.7, especially 7.1.1 and 7.1.2 (transfers and transformations of energy) and 7.1.7 (acceleration).

**Equipment used:**

Per group: FOSS electronic dot car, computer with dot car software downloaded, FOSS plastic tracks.

Consumable: masking tape

**Description of Procedures, notes (teacher manual):**

Each group tapes two pieces of plastic track together, flips them over, and sets up a curved track hanging from supports. They turn on the velocity tracker of the car and run the dot car down the track. Then they plug the car into the computer and get the data.

**Scientific questions:**

What is acceleration?

What energy transfers and transformations are occurring? Is energy conserved?

How does motion change in a curve?

**Connections:** Where does the energy come from to run a car, ride a bike, etc.? How does a hilly or mountainous terrain affect the fuel use of a car or the energy (calories) expended by a person riding a bike?