

THE CASE OF THE BLUEBERRY FARM

SCRIPT

1: Now that our inductive loop is set up, we're going to see how inductive loops can help solve real-world problems by looking at The Case of the Blueberry Farm.

2: The O'Connor family has been farming the land in Fayetteville for 60 years. Steve and Samantha inherited the family farm that was originally started by Steve's great-grandparents. Locals have grown to love and cherish the farm and are able to bring their families to pick blueberries to be purchased by the pint. To keep people coming back, Steve and Samantha have carefully selected a dry fertilizer that provides a more consistent crop. This dry fertilizer travels up the Arkansas River before arriving at the farm.

3: This video will explain in more detail how goods travel up waterways such as the Arkansas River.

4: There are ports along the Arkansas River like the port that was shown in the video. The fertilizer is first loaded on a barge. The barge travels up the river until it reaches The Port at Van Buren. Heavy equipment is used to move the fertilizer from the barge to a tractor-trailer and then these trucks take the interstate north to Fayetteville to deliver the fertilizer to the O'Connor's blueberry farm.

5: Sand also comes from the Port of Van Buren and it travels to Northwest Arkansas so that all the sand boxes in parks can be filled up. The sand, however, is transported by a dump truck which looks much different from a semi-truck that would carry dry fertilizer.

COMMENTARY

1: No commentary

2: No commentary

3: Video should automatically start at 1:05. Press "Escape" a single time to exit the video at 3:37.

4: No commentary

5: No commentary

Since these trucks have different parts and unique characteristics, their inductive signatures will appear differently. We will be able to estimate how many trucks are carrying sand versus how many trucks are carrying dry fertilizer in Northwest Arkansas.

6: Comparing these two trucks, we can see that their graphs look different. This is because their axle spacing is different, they have different cab styles, and a variety of other characteristics differ among them. Even the size of the graph can be an indication of what the size of truck is transporting goods.

6: No commentary

7: Meet Jessica from ARDOT. Jessica works in the Program Management division and helps determine what projects receive funding each year. Jessica states that ARDOT is considering two different investment opportunities to improve travel to and from The Port of Van Buren. While ARDOT has \$30 million set aside for these improvements, only one project can be undertaken. Let's take a look at our options.

7: No commentary

8: Our first option is to widen Highway 71B – which is the route that sand travels up from the Port of Van Buren to Northwest Arkansas. This highway widening will allow trucks to move and turn more efficiently and safely and the total project cost is \$30 million.

8: No commentary

The second option is to thicken the pavement on Interstate-49 – which is the route that dry fertilizer travels up from The Port of Van Buren to Northwest Arkansas. Thickening the pavement will allow it to last longer and stay smoother for other vehicles as well as the transport of the fertilizer to places like The Blueberry Farm.

9: To make an informed decision, we should use data available that includes what types of trucks are traveling on each route, how

9: Reiterate that while a lot of data is available to make these decisions, today we will keep it simple as an introduction to data

many, where they are headed, and more. Other data might include the pavement condition or roadway widths along various routes.

and simply look at the number of each type of truck on a particular route.

10: Instruct the students to log into their computer/s and open up a data set on their desktop.

10: Further instructions will be included as the datasets become available for the lesson plans.

11: *Everyone and everything* is affected by transportation engineering – on a big scale all the way down to individual blueberry farms.

11: No commentary

Next time you might be shipping textbooks to your school or medical supplies to the hospital in town.

Your work as a transportation engineer can make a lasting impact on your community, whether you're filling sandboxes or saving family farms.