

# SPHERO REPORT

*Deb Ballin*

Date

**MARCH 1, 2020**

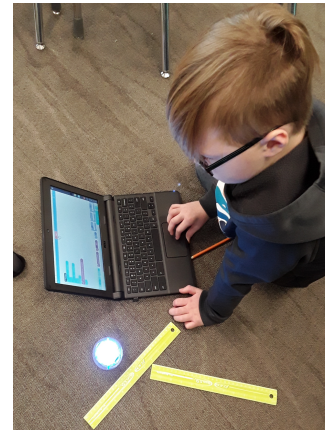
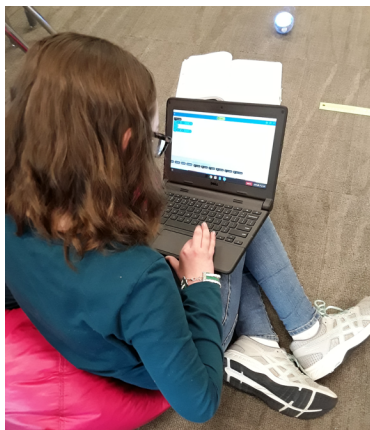
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Students were first assigned to create accounts with sphero.edu so they could program the bots to meet challenges.

## **Learning to aim the Sphero.**

Students first experimented with the Spheros to become comfortable with the devices. They were cautioned to start off slow and just see what the Sphero was capable of doing. They changed the color of the Sphero and used block programming to cause the Sphero to move where they wanted it to go at the speed they wanted.

During the force/simple machines unit, students experimented to see if Spheros would move differently on different surfaces. They ran them with and without nubby covers.

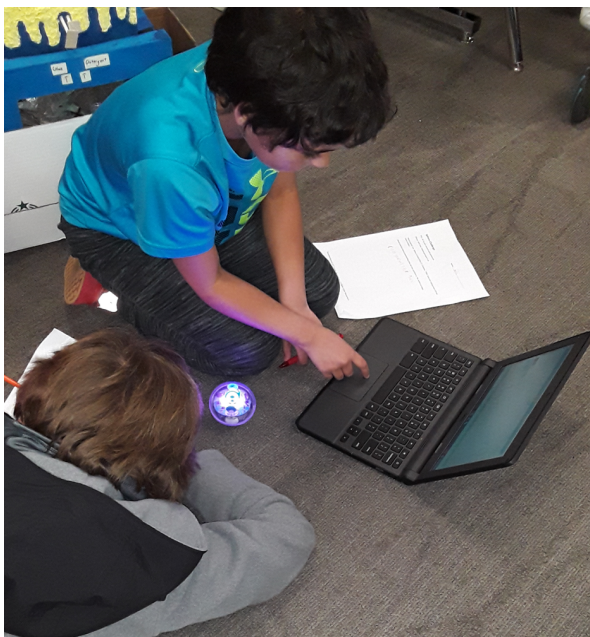


### **Challenge 1.**

Students were to figure out how to make the Sphero go 24 inches straight ahead and then turn left for 6 inches using block programming. Instruction was given as to how a circle is divided into degrees and what degree measurement corresponded to each direction. A connection was made to time zones. Once finished with the challenge, the students were allowed to have some fun and drive the Spheros.

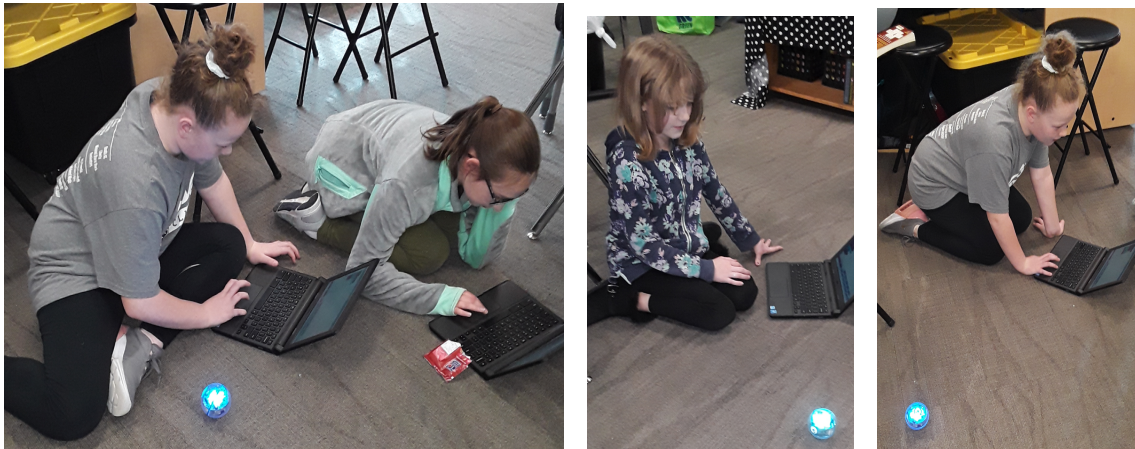
### **Challenge 2.**

Students were to figure out how to make the Sphero travel in a square and then to log the block programming in their journals. The second portion of this challenge was to program the Sphero to travel in a rectangle that was not a square and then record the block programming used. These are third and fourth grade students learning geometry by discovery. The concept that a square was a specific type of rectangle was new to some of the students.



### Challenge 3.

The goal of this challenge was to figure out how to make the Sphero go forward and back repeatedly. Students were to learn how to use both an indefinite loop and then program the Sphero to stop after a specific number of trips back and forth.



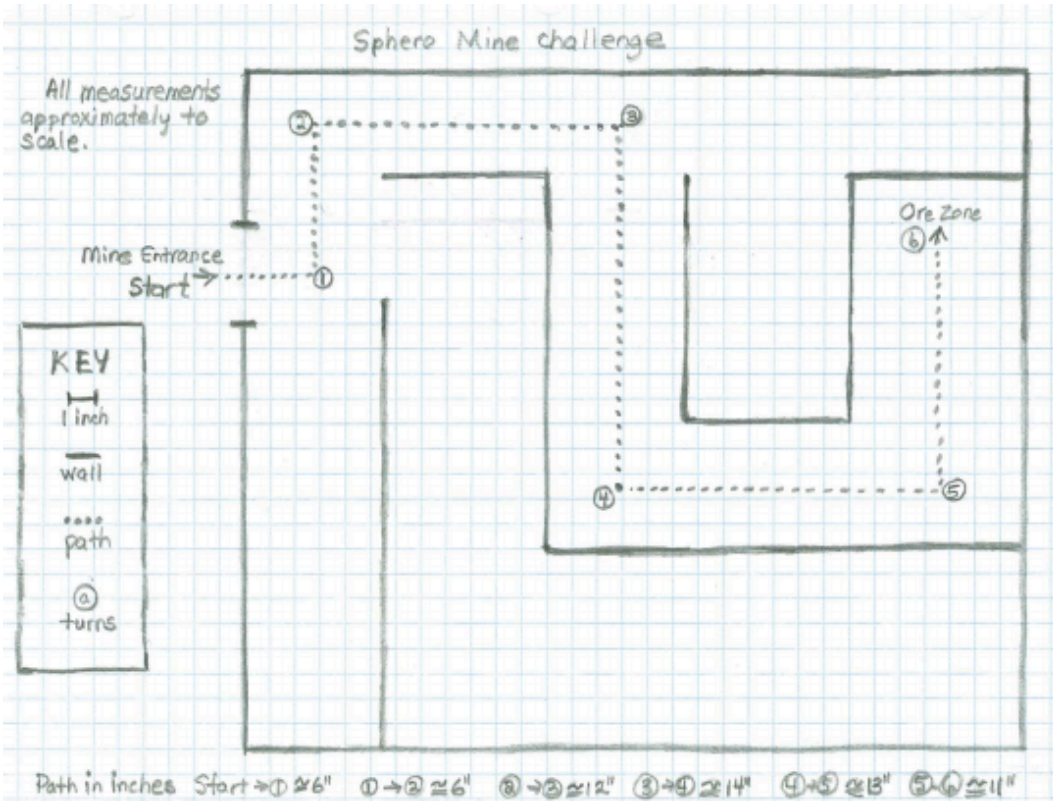
### Challenge 4.

The Sphero needs to travel approximately 18 inches forward, follow an arced path and then return following an approximately 18-inch line parallel to the original path.

### Current Challenge.

Students are being asked to program their Sphero to travel through a mine since we are studying Geology and Soils. A maze will simulate the mine. They will not be able to touch their Sphero once they hit start but must use a diagram to program and not resort to the drive function. The mine (maze) has been constructed from waffle blocks and students have to use the information they acquired during the previous challenges.







### **Classroom Resources.**

There are now enough Spheros for each student to work independently. In addition to the one Sphero acquired through the Civil Air Patrol, others have been purchased from Craigslist, Facebook Marketplace, eBay and Shop Goodwill Online. Chariots, Nubby Covers, and Ramps are also available for student experimentation. Legos, Waffle Blocks, and colored Jenga Blocks provide obstacles and Whiffle balls are available for students to use in designing prototypes of mobile devices to be powered by a Sphero. What started with an idea through the Civil Air Patrol has expanded to include so much more. The Spheros are not threatening, they are easy to use, and fun. They utilize all the coding so necessary for students to learn while not having a lot of tiny pieces they have to build or could lose. Spheros have become a valuable resource to reinforce our math concepts and to learn some coding while exploring geology and mines. They have also become a very popular option for indoor recess.

### **Scope.**

Approximately 35 third and fourth grade gifted students are participating in these challenges. Even though this was not the original intent, it has been a very valuable experience. In addition to the time spent during class, students are spending their own time to further acquaint themselves with coding. One student, a third-grade girl, persuaded her mom to purchase a Sphero for her for Christmas because she enjoyed it so much. The older Spheros that came with some of the equipment purchased at auction are now available for loan for students who are able to sync with them on home devices, further extending their learning.

### **Further Application.**

If the final mining challenge with Spheros is a success, and can be completed before the end of March, students will be posed another challenge using EV3s and challenged to remove a resource from a mine.

Date

**MARCH 23, 2020**

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Due to COVID-19, students have been released on an extended break. Every student has been issued a district Chromebook and over half of my students have either purchased their own or borrowed one of my Spheros to continue their learning. If additional Spheros can be located reasonably, they will be dropped off at student homes as they become available. For the time being, Ollies will be used to at least encourage the coding.

We are all hoping that school will be able to resume soon, but in the meantime, the Spheros are providing a great learning opportunity while making the time at home a little less stressful.

The original intent was to use one Sphero with a small group at the local library. Instead, approximately 20 and upwards of 35 students are using Spheros for extended learning while confined at home. Most have taken the Pre-Test earlier and, if necessary, the Post-Test will be administered at a later date electronically using Google Forms.