A Suggested Lesson Sequence

Week 1 - Guided Discovery: *Discover and explore with Sphero*
Learning through play, students work in teams to discover and explore the unique functions of Sphero.

- *Roll* - Sphero is controlled by a person using a smartphone or tablet to manipulate Sphero's motor controls (the technology within) to play a game such as racing.

- *Colour Change* - you can change Sphero's colour! Sphero contains a unique RGB LED that allows thousands of possible colour changes. This comes in handy when you've got five or more Spheros playing simultaneously.

- *Physical Detection* - Sphero can detect objects in its path. Set up an obstacle course and explore this function.

- *Gesture* - Correctly match the colours on your screen by moving Sphero in the right direction.

- The *Input* function runs similarly to *Gesture*. Let Sphero be the game controller and manipulate orientation for certain types of game play.

- With the *Macro* function, commands become the main source of Sphero's game play; they generate movement, accomplishing your goal. *Blox* is the perfect example of this function. Drag and drop command "blox" into a timeline to program Sphero to work autonomously.

source: http://blog.sphero.com/blog/sphero-functions/

Use the following ***Sphero Lightning Lab Cheat Sheet*** to explore a checklist of different actions and tools - http://scottpantall.com/wp-content/uploads/2016/06/LightningLabCheatSheet.pdf
(Students could check off a list of actions and tools as they explore them.)

Week 2 - Guided Practice: *Discover and explore drawing and coding with Sphero*
Suggested lessons and activities can be found at Sphero Edu:
https://edu.sphero.com/cwists/category

Students work in teams to:
- explore the draw canvas to draw shapes that represent code.
- write letters and spell words with Sphero, and navigate around obstacles to explore the surrounding space.
- draw different shapes and calculate the perimeter of each one: square, rectangle, and triangle.

- learn how to create programs using block coding, and gain an understanding of loops and operators.
- learn a new use for the lights on Sphero.
- explore the different variables of movement, direction, and speed with one bar of code.
- explore writing chains of code (writing a series of actions rather than one at a time).

Week 3 - Guided Practice - ***Explore coding and design challenges with Sphero***
Suggested activities can be found at Sphero Edu:
https://edu.sphero.com/cwists/category

*S*tudents work in teams to explore a design challenge:
- create a **Mini Golf** course which then can be played by coding a Sphero from the Tee to the Green. (Grades K-8).
- learn about speed, distance, velocity, as well as "if/and" statements and basic rules to the sport of **Curling**. (Grades K - 12+).
- design, construct and test **vehicles powered by Spheros**. (Grades K - 7).
- engineer **Sphero drawn chariots** and write code to compete in chariot races. (Grades 4 - 6).

Weeks 4-6 - Guided Application- ***Apply learning to a new context***
Students work in teams to plan, design and learn from their own design challenges or games, and then share their design challenges or games for other students to try.

- brainstorm design possibilities; generate potential ideas and choose an idea to pursue
- outline a general plan; identify tools and materials
- construct a first version of the design
- test the design, gather feedback and make changes
- construct the final design
- share with others - demonstrate and describe the process

Ideas to consider:
Learners capture and document their own learning process (using the devices they already have in their hands to operate the Sphero).

Student self assessment:
What did you learn today?
What worked? What was difficult? What will you try next time?
What do you wonder? What are you curious about now?