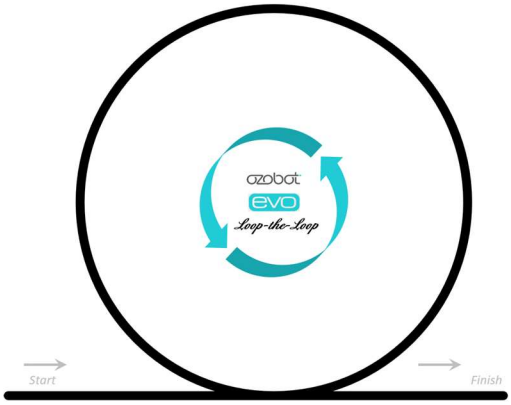
OzoBlockly Challenge: Evo Loops-the-Loop

By Richard Born
Associate Professor Emeritus
Northern Illinois University
rborn2@niu.edu

Many youngsters from 1968 to the present have spent countless hours playing with *Hot Wheels®*. One of the many items in their product line is the classic Dash & Crash Speedway™, which includes cars, launchers, and track for constructing a loop-the-loop. In this lesson you are challenged to design an OzoBlockly program that makes Evo simulate a loop-to-loop on a horizontal sheet of paper containing an Ozomap loop-the-loop track. The Ozomap accompanies this lesson in a document entitled *Ozomap for Loop-the-Loop.pdf*. A small version is shown in the figure below for ready reference while you learn the requirements of this OzoBlockly challenge.



Here are the requirements:

1. Evo's speed should be set to a value between 40 and 65 mm/s. Evo may have trouble negotiating intersections at very low speeds and possibly high speeds too.
2. Evo should be placed at the "Start" location in the direction shown by the arrow. The top LED should be red for 3 seconds while Evo is at rest. The top LED should stay red until Evo reaches the bottom of the circle after its straight-away start. Then it should turn green and stay green while Evo is circling.
3. Evo must circle the loop the number of times specified by a variable in your OzoBlockly program.
4. After the final loop has completed and before Evo reaches the home stretch straight-away, the top LED should change back to red. Evo should proceed to the finish, do a disco animation, laugh, and then turn off.

Extra Credit – Yea!

While at the finish line and after laughing, Evo should speak the total time spent circling. This time should not include time spent on the start and end straight-aways. (Hint: Make use of the Master Level Mode 5 "set timer value" and "get timer value" blocks to determine the time for Evo to perform the loops. Be careful on the placement of these blocks within your OzoBlockly program!)

From this total time circling and knowing the OzoBlockly speed of Evo, use your knowledge of math and science to compute the diameter of the loop. Compare to the direct measurement of the diameter using a meter stick. Explain any differences.