

Activity 6 – 10-Pin Bowling

Aims:

Use the knowledge gained in Activity 5 to make the robot move in curved lines just like a bowling ball. Pupils have to relate the desired action of the robot to a position of a POT.

Materials:

- Working robots (with switch controller disconnected)
- Sets of skittles (e.g. empty water bottles)

Location:

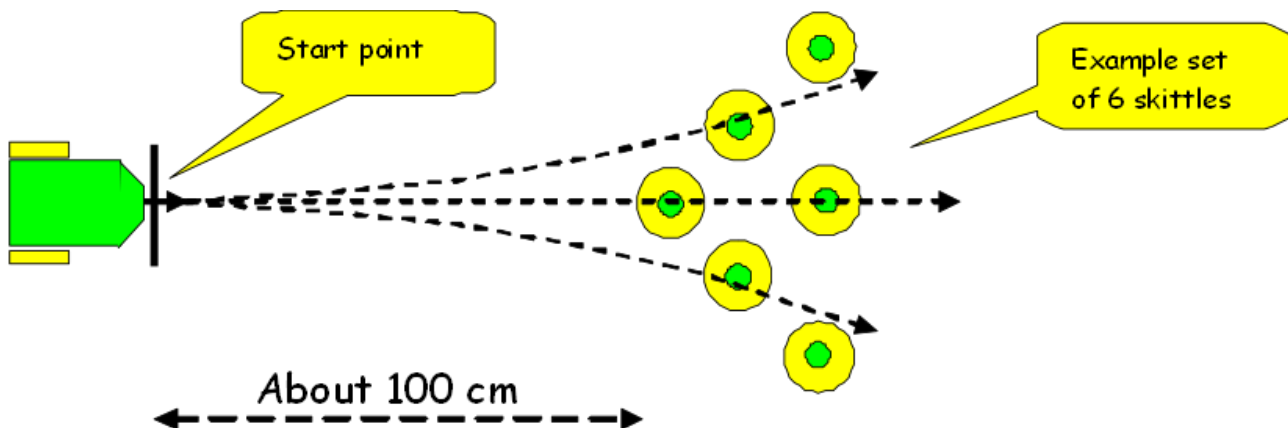
Large floor area, e.g. a hall.

Background:

- Robots don't always move in straight lines. In fact, moving in curves round obstacles can be quicker than moving in straight lines only, and can use less battery energy, allowing the robot to work for longer.
- Curves can be created by moving the wheels at different speeds. These curves can vary from tight circles and spins to long slow arcs.

Running the Activity:

1. Set up a number of bowling rinks with a set of skittles about 100cm from the start point.



2. The robot must always start pointing straight ahead. This is to ensure that the pupils have to adjust the POTs to get the robot to take a curved path. The adjustments are:
 - POT1 – speed of robot
 - POT2 – adjusts speed of one motor compared to the other (gives the curve effect)
 - POT3 – varies the time the robot runs for (between 2 and 8 seconds)[The setting of POTs 1 and 3 affect each other. If pupils are have difficulty then suggest that they set a fixed speed (POT-1) and only vary POT-3.]
3. Use mode 'A0' for this activity. The switch sequence is 'A_D_2A'.
4. To do a run complete the following actions:
 - Put robot into mode 'A0'
 - Set the three POTs to the required setting
 - Press SW-B to instruct robot to read the POT settings
 - Press SW-A to do the move

Allow groups to practice using the three POTs to set different curved paths. Encourage them to take notes on the outcome of various settings.

5. Complete the activity by having a competition with one skittle set-up for the whole class. We suggest each team gets two tries to knock over as many skittles as possible, but feel free to define your own competition and rules.