

STEAM Year 8

Gravity Racer Overview

STEAM SKILLS

- Creativity
- Accuracy
- Using failure to learn and grow

You will

- Apply basic programming skills using Microbit as a control device.
- Manufacture accurately from a drawing.
- Work iteratively to improve a design optimising to best fit a brief.

<p>Lesson Overview</p> <p>During workshop sessions:</p> <ol style="list-style-type: none"> 1. Understand drawing conventions and annotations, visualising a 3D object from a 2D drawing. 2. Manufacture of wooden parts using workshop tools. 3. Assembly of wooden parts and adjustment for tracking. 4. Testing and modifications of a design. 5. Racing, and evaluation of a product. <p>During computing sessions:</p> <ol style="list-style-type: none"> 1. CAD design your wheels and send to technician for cutting. 2. Program and test the servo movement using the remote control. 3. Assemble the circuit for your racer 4. Design your 'bling' for the racer and add to your circuit as required. 5. Testing of the full system on the racer. 6. Design and make any modifications needed. 	<p>Key Words</p> <p>Diameter: width of a circle, straight line distance from one point on the circumference to another passing through the centre.</p> <p>Radius: Straight line distance from the centre of a circle to the circumference. Half the diameter.</p> <p>Servo: A controlled motor which turns through an angle.</p> <p>Coding: To write a computer code for a program.</p> <p>Friction: A force, opposing the movement, due to rubbing two surfaces together.</p> <p>Tracking: The alignment of a pair of wheels which face the same direction.</p>
<p>Suggested reading or support available</p>	<p>Cross curricular</p> <p>Forces and motion (science)</p> <p>Measurements and parts of a circle (Maths)</p> <p>SMSC</p> <p>Re-use and recycle sustainability Sustainable transportation</p> <p>Literacy links</p> <p>Written analysis,</p>

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<h3 style="margin: 0;">SUCCESS CRITERIA</h3> <p style="margin: 0; font-size: 0.9em;">Highlight your starting point for each skill in PINK, at the end of the project highlight where you think you got to in BLUE.</p>			
Grade Range	Creativity	Accuracy	Using failure to learn and grow
0	I presented no work.	I presented no work.	I presented no work.
1	<p>WWW: I can develop some ideas using existing examples and try to make my own changes to them.</p> <p>EBI: I need to make my designs my more my own and try to bring something new into them.</p>	<p>WWW: I have tried to complete the task with some success.</p> <p>EBI: I need to try and take more time and care with my work to avoid mistakes.</p>	<p>WWW: I can identify some basic errors and mistakes with my work.</p> <p>EBI: I need to reflect more on my mistakes and try to not repeat them.</p>
4	<p>WWW: I can develop and show some fresh ideas and my examples are mostly developed by myself.</p> <p>EBI: I need to use other people's examples and ideas more for inspiration than copying and develop my own style.</p>	<p>WWW: I have completed the task with reasonable accuracy and have created a successful piece of work</p> <p>EBI: I need to make sure I have planned and prepared my work beforehand and take more care to avoid errors.</p>	<p>WWW: I can identify some issues and mistakes and overcome them. I can reflect on the causes of mistakes and see why they happened.</p> <p>EBI: I need to think more carefully about past experiences\mistakes so that I do not make the same mistake again.</p>
6	<p>WWW: I use examples only as a start point and can develop numerous different options from there. My final ideas clearly show my own personality and style.</p> <p>EBI: I need to try and produce alternative unique ideas that accurately meet the design requirements.</p>	<p>WWW: I have consistently completed tasks with care and with few mistakes resulting in a successful piece of work.</p> <p>EBI: I need to ensure my work is planned and prepared thoroughly to ensure I can complete a task without any errors.</p>	<p>WWW: I managed to independently identify and fix issues and mistakes.</p> <p>EBI: I should refer to my past errors (looking at my past work) and attempt to resolve potential mistakes at the design stages.</p>
8	<p>WWW: I can develop multiple new ideas and options that accurately meet the design requirements. My solutions are highly innovative, unique and purposeful.</p>	<p>WWW: I always complete the tasks with a high level of precision and accuracy and have produced a quality outcome which is both functional and elegant.</p> <p>EBI I should consider ways of producing every part of my work to a consistently high quality.</p>	<p>WWW: I can shown and explain, using previous issues and mistakes, why my work or solutions will be more likely to succeed than in previous efforts.</p> <p>EBI: When testing a problem, I need to make sure that I also try to prove something doesn't work as well as what does work to gain a better understanding.</p>