



Balloon Powered Vehicles

Grade Level/s:
5, 4

Subject/s:
Technologies, Science, Mathematics

Type:
Unit Plan

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Balloon Powered Vehicles

Students design, make and 3D print a vehicle powered by a balloon that has at least some part of it designed using Makers Empire 3D.

Single Lesson Plan

Balloon Powered Vehicles

Task:
Topic Intro

Activity:
This topic was a follow-up on of a science unit in which a student-teacher in our class completed. The unit was focused on states of matter (solids, liquids, gases) and concluded with students needing to design and make a car which was powered by a balloon. Having knowledge of the key features of how to build and design a balloon powered car, students then undertook the process of re-designing their vehicle knowing that this time it will be constructed using featured printed from the 3D printer created using the Makers Empire app.

Resources:

Designs

Students spend several lessons creating a design of their proposed vehicle. It is important for students to draw a design that is the exact measurement/size of the vehicle they plan on printing as this will give a greater perspective on if things will fit together and work correctly, as planned. This will save a lot of heartache later on when students print their designs as they should look close to what was intended.

Workbook (to do a design in) Ruler
Pencil

Creating	Students spend several lessons recreating their designs onto Makers Empire. Most of my students used Blocker or Shaper tools to design their vehicles on the app. They were encouraged to make their designs with a bit of 'flair'. Allow time to print off 3D designs.	3D printer iPads
Building	With students having printed off the chassis/body of their vehicles, they are then tasked with making their vehicle move as far as possible by incorporating other design features that were not 3D printed. Popular with my students was wooden skewers with bottle tops attached as axles and wheels. A balloon with a straw also needs to be attached to the car. Lots of tinkering will happen during this stage as students make small adjustments in order to get their vehicle moving.	Various making resources
Race Day	Students race their vehicles. We had several races such as: - which vehicle moved the furthest with one balloon blown up - which vehicle could move from one end of the gym to another in the quickest manner - challenges to other vehicles	Smooth surface to race along Camera Stop watch

Curriculum

Australian Curriculum:

Reading And Interpreting The Graduated Scales On A Range Of Measuring Instruments To The Nearest Graduation (ELBM149)
 link (<http://rdf.australiancurriculum.edu.au/elements/2014/09/a2f81f4c-e033-40db-9195-9e4600a2537f>)

Use scaled instruments to measure and compare lengths, masses, capacities and temperatures (ACMMG084)
 link (<http://rdf.australiancurriculum.edu.au/elements/2014/09/64ce640f-70e4-4388-8cd6-9e4600a2537f>)

Comparing Areas Using Grid Paper (ELBM508)
 link (<http://rdf.australiancurriculum.edu.au/elements/2014/09/6b70e44a-3ca3-4f7b-9e14-9fb900e53e3d>)

Observing That Gases Have Mass And Take Up Space, Demonstrated By Using Balloons Or Bubbles (ELBS079)
 link (<http://rdf.australiancurriculum.edu.au/elements/2014/09/53077e0a-3460-47b4-b59c-9f7f00c6e67a>)

