



LEGO Resources

Gravity Walking Animals (Passive Dynamic Walker)

Lesson: Passive Dynamic Walker

Key Stage / Number of Students	Resource	Time Frame
KS 2 / Any number of Students (Example 12)	One x Base per student or per pair. (Example 12 bases) Materials to build model to go on base (Example, Lego blocks) Ramp	60 - 120 Minutes

Overview: Gravity and Walkers can create some fantastic effects, this activity should inspire learners to learn more about mechanics, gravity, friction and turning forces.

There are lots of videos on passive dynamic walkers, if there is time show one, I suggest <https://www.youtube.com/watch?v=rhu2xNlpgDE> and <https://www.youtube.com/watch?v=yx5fWGO1A24>

Aim and Objectives:

To produce a unique walking animal, creature or vehicle capable of walking down a ramp, rather than tumbling or sliding.

Objective: Build or use a base that will allow periodic motion of a central leg, while a front and rear leg prevent tipping and provide friction.

Use this base to design a model that will allow the base to walk down a ramp. This should be functional but also interesting to look at or have a story. Example would be Walking Robots and alien lifeforms.

Background:

Passive Dynamics, or unpowered motion, is an important to all systems of motion both mechanical and biological. This activity really highlights how passive systems can have a huge effect on performance and stability.

Stretch and Challenge:

There are lots of different base designs, Learners can move on to research types of passive dynamic motion devices and have a go at building other designs.