











Ups & Downs

Keywords	Level	Time	Core Skills	Type of Activity
				
Forces, Gravity Falling Objects Speed, Deceleration	Second Level	1.5 h	Calculating, modelling, evaluating designs Budgeting Team work	Investigation Science experiments

Brief Description	
	Ups and Downs combines two activities. Students will earn “money” by making and launching simple paper rockets. This “money” will be used to purchase materials for an egg-stronaut landing craft. In small teams, students will design, make and then test their landers by dropping them from the low roof of the Observatory.
Learning Objectives and Curricular Links	
	Estimating and calculating speed and acceleration. For Junior Cycle: Physical World 2, 3
Materials	
	<p>Straw Rockets</p> <ul style="list-style-type: none"> • scrap paper • masking tape • straws <p>“Egg-stronauts”</p> <ul style="list-style-type: none"> • eggs • assorted lander materials (string, bubble wrap, plastic bags etc) • stop watches • meter sticks

	Background Information / Skills required
	<p>Parachutes for landers can only be used in atmospheres -i.e. for the Earth and for Mars. Information on previous Martian landers is here. The Beagle 2 was found in January 2015, read about it here. Activity is based on ESERO's A Soft Landing Straw Rocket Design is Activity C in Chapter 2 of the Primary ISS Education Guide</p> <p>Skills: measurement of distance and time Design and make</p>
	<p>Summary Activity Description</p> <p>Students will:</p> <ol style="list-style-type: none"> 1. Make a straw rocket to compete for the largest budget 2. Draw their design for an egg-lander, within budget constraints. 3. Make and test their lander, refine design as needed 4. Measure distance and time to calculate speed of their lander 5. Evaluate different landers and compare how well they worked.