Key Stage 3 Curriculum

KEY STAGE 3

Medium Term Plans

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Subject Science **Unit/Area** Reach for the Stars **Year Group** 7, 8 and 9 **Term** Autumn 2011

Learning Outcomes	Teaching Activities and Resources	Assessment Opportunities and Links to B[2]
All will experience • Tasting a range of space food • Things that are vacuum packed • Changes of temperature - darkness, cold, heat of the sun. • Explore how materials are changed by heat and cold. • Changes of temp/ environment • Feeling of moving around with restrictions (spacesuit? Heavy boots? Mud? Through the swimming pool?) • Movement of space objects including rockets • Range of materials from cold, hard, shiny metal of spaceship to dried out dusty soil and slime • The weather! • The Sun Dome (Culham Institute) • Space travel simulator? • 'Space' music and sensory room • The night sky?	• Making scale models of planets, asteroids etc and hanging them • Creating a dark space environment • Moving through a meteor shower • Make a space ship / space suit and test it in different conditions • Cooking – changing materials. Star, moon, sun shapes. • Sun Dome (Culham Institute) • Wearing clothes for different weather conditions and going out in all weathers. • Moving objects through the air – by push, pull, twist (e.g. elastic band plane). Water Rockets. Other rockets. • Listening to space music / 10…9….8…etc • Space travel simulator and other software providing sound and images of space – project in sensory room. • Telescopes for night viewing?	P4 Explore objects and materials, changing materials and observing the outcome P4 Observe different movements and changes P4 Cause movement by pushing and pulling P4 Communicate / respond to change P4 Anticipates what will happen P4 Test materials by manipulating them in different ways P5 Indicate the before and after of material change P6 Carry out a simple test; identify differences; show an awareness that some things always happen P6 Find arrange of things that are pushes, pulled; predict an increase in speed if an object is pushed harder P8 Make observations of changes of movement resulting from actions; consider what might happen including safety
Most will • Know that the sun is a star and the	• www.Kidsastronomy.com • Make scale models of planets, stars,	L1 Uses vocab: push/pull, stop/go, fast/slow L1 Predict what might happen; take part in

source of heat and light • Know that the moon is made of rock and reflects sunlight • Know that the Earth is a planet and that there are other planets • Know that the Universe includes all of space • Know that there is a force called gravity which pulls flying objects back to earth • Know that rockets work through forces and have forces acting on them • Know that forces come in different sizes • Know that forces can make things move, change speed and direction • Know how to test materials for strength, weight and how waterproof they are • Describe the change resulting from their action	space • Make a space ship / space suit and test it in different conditions • Daydream Education software plus Brian Cox DVDs • Orerry • Water and other rockets • Investigation and testing of materials for how strong and waterproof they are – use to build a space suit or shuttle (links to Art?) • Flight! Putting objects in orbits using different forces – catapult, elastic band planes, rockets • Testing aerodynamics of how objects fly – which is best? Use this information to build a rocket. • Measuring weight of materials. • Sun Dome (Culham Institute	group or class test; attempt to give a reason for what happened L2 Describe movement in terms of speed and direction L2 Describe similarities and differences between materials; sort materials into groups and describe the way they are changed by different processes L2/3 Speed and direction can be changed by a force applied L2 Enquiry: Use simple equipment provided and make observations related to task; observe and compare; say whether what happened was expected.
Some will • Know the necessary conditions for life on Earth	• As above	L3 Explain why some materials are suitable for specific purposes L3 Enquiry: Put forward own ideas about how

• Know that the earth spins on its axis and takes 24 hours to do so, which explains day and night. • Know that the seasons are caused by the position of the earth as it orbits the sun • Name the planets in the solar system and their order • Name some materials and give examples of their properties • Carry out an investigation into the properties of materials, record and communicate findings • Understand that the sun produces heat by fusion (Sun Dome) and is the source of heat and light on earth • Know that the energy from the sun can be used to make electricity • Appreciate the size of different planets and space objects and the scale of the Universe • Identify the forces involved in making different objects move and which are biggest		to find the answer to a question; carry out a fair test. Make relevant observations using simple equipment. Communicate findings in scientific ways. L3 Relate the direction or speed of movement of an object to a force applied L3 Forces: The sun is a star; the earth is a planet which orbits the sun; rotation to explain day and night L4 Understand the effect of gravity and air resistance on motion of objects L4 Make generalisations about phenomena e.g. motion being affected by force resistance and gravity

Teaching Activities and Resources	REACh extension activities, consolidation
•	Create a dark area - illuminate using appliances linked to different switches. Create their own light / sound shows, which do people prefer and why? Look at Visualisations on computer, sound produces a light image; can they link the two for their area? Use blindfolds, ear defenders/mufflers etc to see what it's like without heat, light sound or movement. How does that change our perception of the world? Mix with lots of materials that don't respond to squeezing, pulling etc Use large elastics, big blue and body suits and the 'roller machine', so the children experience stretching, squashing etc Race! Provide materials that are too heavy to fly, bands that are too big or too small, balls with holes in to move by blowing…what doesn't work, will pupils discard, can they give a

	reason why? Add holey balls, why do they sink? They're lighter aren't they? Can they describe the force they feel, can they draw Set a mission to motivate creation, e.g. rocket into space As above. Why do we need to fly? Set up experiments to see what method of transport is quicker. Set a class challenge. In small groups have to get a 'toy' to travel around the school and arrive at Jane's office using 3 different methods of propulsion…mark out a route, on your marks ...