Space

Early Level

Lesson 1	What's Up There?
Outcome	I have experienced the wonder of looking at the vastness of the sky, and can recognise the sun, moon and stars and link them to daily patterns of life. **SCN 0-06a**
Resources	None –(Observation skills and thinking)
Lesson Outline	Take pupils outside, preferably on a sunny day. Get them to look around them and up at the sky. (Do not look directly at the sun). Get them to talk about what they can see, is it always the same. What happens to the sun during the day? Why? What are shadows, how are they caused? How far away do they think things are? What happens at night, what else do they see? If we didn't have clocks and all the constraints of modern life, how do they think their day might be controlled? Are there people today whose day is controlled by the Sun. (Farmers may be an example)

Level 1

Lesson 1	Chasing Shadows
Outcome	By safely observing and recording the sun and moon at various times, I can describe their patterns of movement and changes over time. I can relate these to the length of a day, a month and a year. **SCN 1-06a**
Resources	Playground Chalk, Rope, Canes
Lesson Outline	The idea of this lesson is to make a sundial to show how shadows change during the day and so show how the Sun moves. If using a playground mark a central position where a pupil can stand. On grass perhaps put a cane up or place or a cone. Get a pupil to stand at the centre and then mark where the shadow falls, record the time and date. Repeat during the day. This will show how the shadow moves around because the sun is moving in the sky. Measure the lengths of the shadows which will show that the sun gets higher in the sky. What time is the shortest shadow? This can be taken further by showing that over a period of time, the shadows always fall at the same place at the same time of day, but the length changes as we move through the seasons. This can be related to the tilt of the Earth. See also Make a Sundial

Level 2

Lesson 1	Where are we?
Outcome	By observing and researching features of our solar system, I can use simple models to communicate my understanding of size, scale, time and relative motion within it. **SCN 2-06a**
Resources	Selection of spherical objects. Tape measure
Lesson Outline	The aim of this lesson is to lay out a scale model of the solar system to give pupils an idea of the scale of the solar system and also how small the Earth is compared to some of the other planets. See table below. Start by showing the pupils the range of spheres and ask them to guess which one is Earth. Many will think we live on the biggest planet and everything else in the sky is small. – Why does it look small? Could get them to guess distances. Go on a journey from the sun to the edge of the Solar System, placing planets as you go. Get a pupil to stand at each planet with a label. Talk about how long it would take to reach the outer planets. <u>Planet Mnemonic</u> **M**y Mercury **V**ery Venus **E**asy Earth **M**ethod Mars **J**ust Jupiter **S**peeds Saturn **U**p Uranus **N**aming Neptune (**P**lanets) (Pluto) – has been demoted to a planetoid!
Extension	Discuss why the outer planets take so much longer to go around the sun. Get pupils to think about how vast distances are in space by pointing out that on the scale of this model the nearest start (except of course for the sun) would be 300 miles away.

Scale Model of the Solar System

Depending on the amount of room you have, choose either of the distance scales. The first is for a total of 50m and the second for 30m.

	Distance from sun million (kms)	Size (kms)	Diameter compared to Jupiter	Model diameter (cms)	Represented by	Distance compared to Neptune	Model distance (m)	
Mercury	58	4900	0.03	1	Small blue ball	0.013	0.6	0.4
Venus	110	12000	0.08	2	polystyrene ball	0.024	1.2	0.7
Earth	150	13000	0.09	2	polystyrene ball	0.033	1.7	1.0
Mars	230	6800	0.05	1	Small blue ball	0.051	2.6	1.5
Jupiter	780	143000	1.00	24	Size 7 Basket ball	0.173	8.7	5.2
Saturn	1430	120000	0.84	20	Size 3 Basket ball	0.318	15.9	9.5
Uranus	2900	51100	0.36	9	Red pvc balls	0.644	32.2	19.3
Neptune	4500	50000	0.35	9	Red pvc balls	1.000	50.0	30.0

NB On this scale the nearest star to us (not including the Sun) would be 300 miles away!