LESSON SUMMARIES

Lesson 1 (Our Solar System) and Lesson 2 (Moving Earth)

These build on previous understanding from Key Stage 2 and can be used to establish what pupils understand and what misconceptions they hold. It is an opportunity for teaching aspects of 'The Solar System and beyond' from the Key Stage 3 programme of study which need to be accessed before moving on to the following activities.

The supporting resources of images and video clips provide evidence for the prior knowledge from Key Stage 2 (see NC reference sheet) and also for the apparent movement of the stars and planets (see the multimedia section and teacher notes). These images would also stimulate discussion about what they show and what conclusions can be drawn from them.

The time lapse video clip of 24 hours at the CCLRC Rutherford Appleton Laboratory in the summer is ideal for illustrating day and night and could also lead into discussion about seasonal changes.

Lesson 3 Using Models

This is an opportunity for pupils to demonstrate their understanding from lessons 1 and 2 and can be used to address their misconceptions. Pupils can be directed to producing a particular model based on their level of understanding. The emphasis of this lesson is on the peer or self evaluation of the model identifying what the model can demonstrate and the limitations of the model.

Lessons 4 and 5 Because I said so!

These lessons are about the history of astronomy and the people who are responsible for our views of astronomy today. They are based on the evidence that they provided and the conclusions that they drew and it looks at the reliability, or otherwise, of that evidence. The emphasis is on the evidence that survives today and how that initial evidence was accepted at the time. It is important that the pupils realise that the perspective of the evidence can change over time and how new evidence makes people think and re-evaluate previous evidence.

Lesson 4 is concerned with documentary evidence from five different types of sources; primary sources (postcard and diary) and secondary sources (books, newspapers and the internet). In each case the authenticity of the source and the possibility of bias can be discussed. Pupils follow the historical development of ideas in astronomy over time; sometimes not much happens and then a new technology such as the telescope can lead to several major advances quite quickly.

Lesson 5 is a dramatised audio discussion between the five astronomers from lesson 4 (Aristotle, Copernicus, Galileo, Caroline Herschel and Clyde Tombaugh) which illustrates how their ideas were accepted (or not) and built upon. Scientific method places emphasis on hypothesis and the need for evidence before a theory can be formulated and this lesson also looks at the different elements of scientific method. Present day astronomers at the CCLRC Rutherford Appleton Laboratory explain what they do and what they hope to find out about in space.

LESSON SUMMARIES

Lesson 6 Is Pluto a planet?

Whether Pluto is a planet or just a large rock captured from far out in space by the Sun's gravity is still a matter for debate among astronomers. This lesson is about the classification of a planet and the criteria used to do this. Should Pluto be classified as a planet according to the criteria? Working through a series of exercises, pupils are expected to come to a decision and justify their views using evidence. They will have an opportunity to think about a variety of objects in the Solar System; asteroids and comets as well as planets.

Lesson 7 Mission to Pluto

This is a computer-based lesson. Information is provided on space missions past, present and future, many of which involve the UK. Information about how evidence is collected, which instruments are available and the planning of these missions is given. Pupils use an interactive animation to design their own mission to Pluto, within a payload constraint. They must then explain what evidence they would be able to collect from the instruments they have chosen to put on a mission to Pluto. Should their mission receive the necessary funding, a video shows how the spacecraft would be tested at the CCLRC Rutherford Appleton Laboratory before launch.

Lessons 8 and 9 Putting it all together

During these two lessons pupils have the opportunity to present their understanding of the issues involved in deciding whether Pluto is a planet or not to a wider audience. Alternatively, the lessons may enable some pupils to consolidate their knowledge and understanding of 'The Solar System and beyond'. A wide range of projects is suggested suitable for use with individuals or groups of pupils depending on their interest or ability. The outcome could be used to assess the pupils' progress against National Curriculum expectations.