ABINGDON SCIENCE PARTNERSHIP

11. Exploring the Solar System

Edexcel GCSE Astronomy Course

Draft Plan:

Look at Planets today website to see solar system from various views

Define AU, perihelion and aphelion

Make a photogallery of objects with definitions - planet, dwarf planet, moon, SSO, asteroid, meteoroid, comet (long and short period), Kuiper belt. Oort cloud

Suggest self study task for term - make a solar system handbook with essential info (give a list)

Make an A4 solar system scale sheet (see hard copy example)

11.1 Be able to use data about the names and relative locations of bodies in the Solar System, including: a planets b dwarf planets c Small Solar System Objects (SSSOs): asteroids, meteoroids and comets

Use this website to look at the real time positions of the planets right now
https://www.theplanetstoday.com/the_planets.html

(NB Take a look at the view relative to the zodiacal band and positions of some dwarf planets shown e.g. Makemake, Ceres, Haumea and centaur Chiron etc)

What are the definitions of the bodies listed above? Make a list:

https://www.jpl.nasa.gov/infographics/infographic.view.php?id=11268

https://nineplanets.org/small-solar-system-bodies/

https://www.universetoday.com/60072/what-is-a-moon/

https://www.space.com/51-asteroids-formation-discovery-and-exploration.html

continued….

https://solarsystem.nasa.gov/asteroids-comets-and-meteors/meteors-and-meteorites/overview/?page=0&per_page=40&order=id+asc&search=&condition_1=meteor_shower%3Abody_type

https://solarsystem.nasa.gov/asteroids-comets-and-meteors/comets/overview/?page=0&per_page=40&order=name+asc&search=&condition_1=102%3Aparent_id&condition_2=comet%3Abody_type%3Ailike

Now let’s make a chart of the contents of the solar system...

Distances to some solar system objects in AU

Mars/ all inner planets 1.5AU

Asteroid belt 2.2-3.2

Jupiter 5.2 Saturn 9.5 Uranus 19 Neptune 30

Kuiper belt 30-50

Pluto 30-50, av 40AU

Halley's comet at perihelion 0.586AU; aphelion 35AU

Oort Cloud 2000 - 20000 AU

C/2012 S4 (PANSTARRS) AP 504,443 AU (8.0 ly) peri 4AU

Heliopause 150 AU?

11.3 Understand the orbits of short-period comets and their likely origin in the Kuiper Belt
11.4 Understand the orbits of long-period comets and their likely origin in the Oort Cloud
11.5 Understand the location and nature of the Kuiper Belt, Oort Cloud and the heliosphere

https://solarsystem.nasa.gov/solar-system/kuiper-belt/overview/

https://solarsystem.nasa.gov/solar-system/oort-cloud/overview/

https://science.nasa.gov/heliophysics/focus-areas/heliosphere

Summary diagram:

https://en.wikipedia.org/wiki/Heliosphere#/media/File:Solarmap.gif

Exploring Interstellar space https://www.space.com/nasa-voyager-2-interstellar-space-mysteries.html

Half Term Astronomy Project (1)

Make a fact file about the eight, major planets whch includes the following information about each of them:

11.6 Understand the following principal characteristics of the planets:
a relative size
b relative mass
c surface temperature
d atmospheric composition
e presence of satellites
f presence of ring systems

Research using websites (e,g. https://theplanets.org/planets/); books you may have; You Tube videos e.g. https://www.youtube.com/watch?v=pCoPykw8xug&ab_channel=BRIGHTSIDE and make a presentation, a video, a booklet or a poster with all the information listed above for each planet.

Half Term Astronomy Project (2)

You could extend your project by including information about space missions to each planet - every planet has been visited by at least one:

https://www.sciencealert.com/this-glorious-map-helps-you-keep-track-of-every-space-mission-in-the-solar-system

And remember - you can be as artistic as you like! Here's great example of art being used to explain science:

http://tabletopwhale.com/2019/06/10/the-solar-system.html

And you might enjoy building a scale model of the solar system at home - here's an example to get you started:

https://sizemattersscience.wordpress.com/2015/06/17/build-your-own-solar-system/