Year 7 Science - Lesson Plan

Date: Wed 21th May 2014

Topic: Astronomy; Lesson 2 Gravity, Orbits, Day/Night, Seasons

Text Reference: PS7 Chapter 9, Earth in Space

Learning objectives:

- Review planets from last lesson/make pocket solar system
- What keeps planets in their stable orbits
- Explore and explain what causes day and night
- Explore and explain what causes the seasons
- Explore the positions of the sun and Earth in orbit during equinox and solstice events, and explain their meaning.

STUDENT ACTIVITY		TEACHER ACTIVITY	HOMEWORK / COMMENT
	7min	How did you find the software? **1. Reminders – Homework from last week?** • **Warm up:** • **Around the solar system** • **Can you name one thing that you learned by doing the plant grid (second round)**	
2. Working with others (pairs) Pocket Solar System **Explain task, Get everyone to measure up their piece of tape and start together! Clear instructions! You can use solarsystemscope to help you with the planet colour and size.** • Fast students that finish first - have them work on the planet grid. Or • Get them to Complete **text questions** PS7 p. 343 – Q 1,2,3,4 (on Gravity) Review their findings re pocket solar system distances. Are there any gaps between the planets? What do you notice? _____	30min		**Prac experiment materials:** use torch and globe set up – Sandra has props, also body demo w Colleen or one of the students. **4. Use this simulation as demo support (background)** http://astro.unl.edu/classaction/animations/coordsmotion/eclipticsimulator.html

		3.Q: So how do planets stay in their orbits? What keeps them orbiting around the sun? **Gravity!** Briefly mention that gravity holds the planets in the orbit around the sun. The strong pull of gravity of the sun keeps the planets which are smaller orbiting in their predictable parths. Discuss what the orbits looked like in the software. What shape?	
4. Working with others: practical experiment Day/Night/Seasons (follow teacher demo) Materials (torch and globe set up) Students to model in small goups, record experiment results and answer questions on worksheet provided Practical experiment Night_Day_Seasons_2014.docx _____ **5. Solo: Complete Worksheet Day/Nigh/Seasons (to follow experiment)** **we could start if we have lots of time…likely not** with the help of your text (if necessary) PS7 chapter 9.3 Day_night_seasons_worksheet_2014.doc _____	5-8min 20min	**4. Explain and demonstrate:** **http://astro.unl.edu/classaction/animations/coordsmotion/eclipticsimulator.html** **Use animated simulation.** **We know that all the planets orbit the sun** **We also know that all the planets spin around on an axis (rotate). Relate to what they saw in software/astrotour.** **What do we know about the Earth?** • **Orbits the sun** • **Spins on its axis (real or imagined?)** • **Which direction? (clockwise/anticlockwise?)** • **How do we know?** • **Axis always points to the same spot – Polaris.** • **Tilt – 23.5˚.** • **Where is the equator?** • **Northern, southern hemisphere, north pole south pole?**	Qs: Which direction is it orbiting in? Anticlockwise! All planets in our solar system orbit anticlockwise. Why? This is because when our solar system was forming the gas and dust clouds were spinning this way. Triggered by a counterclockwise rotation.

Exgensions/Backup/Homework 1. Solo: Complete **text questions** PS7 p. 343 – Q 1,2,3,4 (on Gravity) Make notes in the appropiate OneNote section _____		**Practical experiment investigation:** **1. What does one orbit of the Earth around the sun mean?** **2.What causes night and day?** **3. Which way does the Earth spin?** **How do you know?** **4. What gives us our seasons?**	
	5min	**If we have time touch on timezones.** **Draw on whiteboard.** **History, why we have time zones,** **How is the world divided into timezones.** **How many timezones are there in Australia**	
	2min	**6. Leave sufficient time for wrap up/clean up**	**6. Explain and allocate homework** 1. Planet grid – finish. reminder, we will finish questions together. If done 2. Complete **text questions** PS7 p. 343 – Q 1,2,3,4 (on Gravity) OneNote