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| Subject: Science Year: PHASE 2 Year A – Seasonal changes, Earth and Space NC/PoS:   * Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. * Describe the movement of the Moon relative to the Earth. * Describe the Sun, Earth and Moon as approximately spherical bodies. * Use the idea of the Earth’s rotation to explain day and night and the apparent movement of the Sun across the sky. |
| Prior Learning (what pupils already know and can do)  The movement of Earth in space gives us day and night and it takes the Earth a day to go around on its axis. In the UK (United Kingdom), the day length is longest in the summer and shortest in the winter. The moon goes around the Earth. |
| End Goals (what pupils MUST know and remember)   * Know that the Earth is a sphere, spins on an axis as it travels round the sun, when one sides faces the sun the other faces space * Know that the Earth’s tilt on its axis is what causes the 4 seasons. Sometimes it points towards the sun and other times it points away from the sun. * Know that the moon moves around the Earth in an approximately circular orbit, once around the Earth in approximately 27.3 days * Understand that seasons are different in the northern and southern hemisphere. * Know that the movement of Earth in space gives us day and night. Know it takes the Earth a day to go around on its axis. * Know that the moon goes around the Earth. * Know that the Earth orbits the sun once a year. * Know that the side facing the sun is bathed in light and heat (daytime) and the side facing space is cooler and darker (night). |
| Key Vocabulary: planets, revolve, sphere, solar system, spherical, orbit, orbital path, axis, tilt, rotation, shadows, seasons, spring, summer, autumn, winter. |
| Session 1: Recap on what a season is.  L.O. I can recognise how the earth moves to give us day and night and how this changes according to the hemisphere.  The movement of Earth in space gives us day and night and it takes the Earth a day to go around on its axis. In the UK (United Kingdom), the day length is longest in the summer and shortest in the winter. The moon goes around the Earth.  Using a globe, show the children the two hemispheres. Use a torch to represent the sun and how the earth rotates and the different hemispheres are exposed to the light. Children to create their own models and explain how the earth rotates using the model suggested on the BBC link below.  [Earth, Sun and Moon - BBC Bitesize](https://www.bbc.co.uk/bitesize/topics/zp397ty/articles/zhtkjfr)  Model this sharing how the different hemispheres are effected. Evidence could be children explaining using their model and QR codes to share their understanding or a series of photographs with the children’s comments.    Vocabulary: seasons, autumn, spring, summer, winter, northern hemisphere, southern hemisphere, rotate. |
| Session 2: Recap: previous lesson about the earth’s rotation.  L.O. I can recognise the impact the sun has on the earth.  Working Scientifically:  Interpreting results  Use test results to make predictions for further Investigations  Draw conclusions from results – Temperature to be gathered in the shade and in the sunlight at different times of the day. Children to track the suns movement and then to plot them on a graph. Children then can draw scientific conclusions.  Children learn that the sun is a star at the centre of our solar system and the Earth  is one of eight planets in the solar system. The Sun and the eight planets are all roughly  spherical and the order of planets from the sun is: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.  Suggested resources:  <https://www.youtube.com/watch?v=libKVRa01L8>Solar system National geographic (up to  2.57) <https://www.youtube.com/watch?v=UzbnPX8Stnc>the Solar System to scale |

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| Session 3: Recap: previous lesson  L.O. I can recognise how the earth orbits the sun.  Children learn the Earth and the other planets orbit the sun and the Sun is much bigger than the planets, so its gravitational pull is larger. The Earth takes about 1 year to orbit the sun.  Suggested resources: <https://www.youtube.com/watch?v=lIY8Odoux1w>revolution time around the sun Children research the orbits  Notes: The Sun is at the centre and the planets follow individual paths called orbits around it. They all travel in the same direction, but move at different speeds and take different times to complete one orbit. The fact that the Earth travels around the Sun has been accepted for less than 400 years    Vocabulary: orbit |
| Session 4: Recap: how long does it take the Earth to orbit the sun?  L.O. I can recognise how the moon goes around the sun.  Recap that Earth spins on an axis as it travels round the sun and when one sides faces the sun, the other faces space. They understand that the side facing the sun is bathed in light and heat (daytime) and the side facing space is cooler and darker (night) Suggested resources:  <https://www.bbc.co.uk/bitesize/topics/zkbbkqt/articles/zn34r2p>Day and night  Model how the earth, sun and moon sit in our solar system.  https://youtu.be/HLhnXu71OKo    Vocabulary: axis, tilt |
| Session 5: Recap:  L.O I can recognise how the position of the Earth affect daylight hours.  Using online research (this may be given to the children)  They are to investigate how the amount of day light changes according to the season. Children are then to compare this with another country such as Australia. Children will need to identify these on a globe and draw scientific conclusions.  Pattern seeking  Ask a question that is looking for a pattern based on data given.  Decide what is being measure and the units of measure. |
| Link to career: Astronomer, physicist  [https://pstt.org.uk/application/files/2816/4942/8557/Planetary\_physicist\_-](https://pstt.org.uk/application/files/2816/4942/8557/Planetary_physicist_-_Dr_Sheila_Kanani.pdf)  [\_Dr\_Sheila\_Kanani.pdf](https://pstt.org.uk/application/files/2816/4942/8557/Planetary_physicist_-_Dr_Sheila_Kanani.pdf)  [https://pstt.org.uk/application/files/5716/2851/6121/Astrophysicist\_-\_Vanessa\_Emeka-](https://pstt.org.uk/application/files/5716/2851/6121/Astrophysicist_-_Vanessa_Emeka-Okafor.pdf)  [Okafor.pdf](https://pstt.org.uk/application/files/5716/2851/6121/Astrophysicist_-_Vanessa_Emeka-Okafor.pdf) |
| Scientists who have helped develop understanding in this field:  Aristarchus (310 – 230 B.C.). He was the first to figure out that the Earth travels around the Sun.  Nicolas Copernicus (1473 – 1543). Had the idea that Earth revolves on its axis and the Earth and other planets orbit around the Sun |