

God is Pure and Holy Teacher's Topic Guide Year 6

Topic: Light and the eyes

Duration: 4 weeks

Spiritual Overview: God is Light

God created light on the first day of creation. Light is essential to life. God Himself is light.

Light is a symbol of goodness and purity, as opposed to darkness (a symbol of that which is evil). God wants us to walk in His light and live a life of purity.

God is light. To walk in God's light is to walk in purity. To exclude God is to walk in darkness. Before the sun was created, the earth was illuminated by God's own light. From the book of Revelation we understand that God's light will not allow any darkness or night in the Kingdom. Jesus Christ is a light to the world. As Christians we should reflect this light so that others may see Him.

Values: Our response to 'God is Pure and Holy'

- **Integrity:** always doing the right thing; showing the Fruit of the Spirit in our lives
- **Civic pride:** keeping our environment clean; obeying the law
- **Respect** for what is right
- Showing **obedience** to God by doing the things He wants us to do; admitting when we make mistakes and asking for God's forgiveness.
- understand that to live in God's light, we need to be forgiven for our sin
- understand that to live in the light we need to follow God, trust and obey and read His word.
- understand that as Christians we need to daily ask God's forgiveness for the wrong things we have done so that we become pure and blameless in God's sight

Outcomes: Students will

- explore the properties of light, including reflection, refraction, spectrum and shadows
- make a study of the eye
- Explain the Biblical parallel between light, (things of God), and darkness, (things of Satan)

Bible stories and passages

Genesis ch 1 God said "Let there be light."

Matthew 5:13-16 Christians as salt and light.

Galatians 5:22 Goodness is a fruit of the Spirit.

Ephesians 5:8-11 Live as children of the light.

Matthew 6:22-23 If your eye is clear your whole body will be full of light.

The parables: Seeing with spiritual eyes in order to understand the meaning.

Bible verses

1 Peter 2:9 He has brought you out of darkness into His wonderful light.

Romans 13:12 Put on the armour of light.

John 8:12 Jesus said, "I am the light of the world. Whoever follows me will have the light of life and never walk in darkness."

1 John 1:5 God is light and there is no darkness at all in Him.

1 John 1:7 If we live in the light, just as He is in the light, then we have fellowship with one another, and the blood of Jesus, His Son, purifies us from every sin.

Key Questions

- What is light?
- How does light make you feel?
- What is darkness?
- How does darkness make you feel?
- Why does light remind us of the things that come from God?
- Why does darkness remind us of things that come from Satan?
- What does the Bible mean by 'walking in the light'?
- Who is the light of the world?
- How is life dependent on light?
- Has God always been there?
- What is the meaning of the word 'create'?
- Why did God call the light 'good'?

Activities

- Define a star. Compare the light of a star to the light of a planet.
- Use models to demonstrate an eclipse of the moon or sun, what causes day and night, what causes tides and what creates our year of 365.25 days.
- Explain what is meant by a light year. Relate how long sunlight takes to reach the earth and name the nearest stars to earth.
- Draw constellations and recognize them in the night sky.
- Conduct shadow activities with a torch.
- Make a shadow stick and measure shadow length.
- Look at light through materials: transparent, translucent, opaque.
- Make a spectrum to see colour and rainbows.
- Explore light rays that are both reflected and refracted.
- Explore the possibilities of flashlights e.g. large, small, for strength and distances of beam.
- Study the eye and relate this to the camera.
- Study some optical illusions.
- Study light and reflection associated with road transport e.g. reflectors, car lights, rear vision mirrors, traffic lights, flashing lights, illuminated signs.
- Research the history of lighting.

Assessment

1. Draw a diagram to show how light rays can be reflected or refracted.
2. Explain the meanings of transparent, translucent and opaque.
3. What have I learned from the study of light and colour...
 - a. about God?
 - b. about doing what God wants me to do?
 - c. about the Bible?

Learning Connections

History: History of lighting

Mathematics: measure length of shadows and beams

Art: Colour mixing; light and dark colours / tones; shadow puppets

Health: Care of the eyes

Biography: Ruatoka and Tungane

Year 6 Values

God is Pure and Holy

Responsibility

Responsibility is...

- Being willing to be accountable for your behavior
- Acting in a mature way
- Being in charge of a person, a group of people, or material things

Being responsible is a sign of maturity. Parenting requires a great amount of responsibility. A baby depends on its parents to care for it in a responsible way. To be away from the baby, the parents will have to organize a baby sitter.

A responsible person...

- does whatever they agree to do. They follow through on their commitments.
- answers for their own actions. They don't make excuses or blame others for what they do. They accept their responsibility of being in charge.
- takes care of their own matters. They don't rely on others to remind them when they are supposed to be somewhere or what they are supposed to bring.
- is trustworthy. If somebody lends them something, that person knows it will be taken care of, and returned.
- makes good judgments, wise decisions and wise choices.
- doesn't put things off. When they have a job to do, they do it.

Activities

1. Make a list of jobs a responsible parent has to do when caring for their baby.
2. Make a list of responsibilities YOU have in your life at the moment.
3. Make a list of things you could improve on to become a more responsible person.

What does the Bible say about responsibility?

Luke 16:1-10 The parable of the dishonest manager

Art Year 6

God is Pure and Holy

Light and the eyes

Wall art text: Live like people who belong to the light. Ephesians 5:8

Visual observation

Aim: To encourage the students to use their eyes to see in detail the things around them, and to develop the skill of visual observation.

- Look through a small hole in a piece of cardboard. Take your cardboard outside and look at plants, trees, flowers, grass, stones. Look at these things carefully.
- Paint some of the things you saw outside.

Painting: experimenting with colour

- Experiment with primary colour, mixing to make other colours.
- Create a colour wheel using the colours of the rainbow.
- Paint a composition using warm colours.
- Paint a composition using cool colours.
- Paint a composition using earthy colours, e.g. browns, reds, oranges
- Paint a watercolour scene using wet paper and a sponge. Watch how the colours merge together.
- Paint a colourful scene, e.g. snorkelling on a coral reef; a flower garden
- Paint a colourful scene, e.g. fireworks; an explosion in the paint factory

Painting: tone and hue

- Create a 'wash-off' painting. First paint the page with thick white paint. Allow to dry. Now paint with thin black paint. Wash off.
- Make a charcoal drawing and paint over it with a thin wash.
- On a practice piece of paper, practice blending black and white in various tones.
- Now paint a scene of your choice using only black and white paint.
- On a practice piece of paper develop various hues of one colour, e.g. if you choose green, start with white, then add a tiny bit of green for light green. Then add more, little by little, until you have dark green. Show the colours on your page from lightest to darkest.
- Paint a scene of your choice using white and one other colour. Try to include as many hues as possible.

Practical Science Year 6

Topic: Light

Split light to make a rainbow

http://www.madaboutscience.com.au/store/index.php?main_page=page&id=40

Split light without a prism Want to make a rainbow but don't have a prism? Here's a simple way to make one anytime the sun is shining. Suitable for kids aged 5 +

What you need:

- Shallow dish
- White wall (or large piece of white paper/card)
- Small mirror
- Water
- Sunlight (the stronger the better)

What to do:

1. Pour some water into the shallow dish.
2. Place the small mirror in the water and prop it at an angle against the side of the dish.
3. Put the dish near a sunny window and position the mirror so that sunlight bounces off it onto a white wall.
4. If you don't have a white wall you can use a large piece of white card or paper attached to the wall.
5. You should see a faint rainbow appear on the white wall or paper. If not, adjust the mirror until you see it.

How does it work?

The water in the shallow dish acts like a prism. When the sunlight travels from air into water it slows down and bends. The seven different colours that make up white light travel at different speeds and therefore bend at slightly different angles. The mirror reflects the different colours so the rainbow spectrum appears on the wall.

Practical Science Year 6

Topic: Light

Bend a Straw with Your Eyes (Optical illusion)

<http://www.sciencekids.co.nz/experiments/strawbending.html>

Using the power of your eyes, bend a straw sitting in half a glass of water without even touching it! It sounds like magic but it's really another amazing scientific principle at work.

What you'll need:

- A glass half filled with water
- A straw
- 2 eyes (preferably yours)

Instructions:

1. Look at the straw from the top and bottom of the glass.
2. Look at the straw from the side of the glass, focus on the point where the straw enters the water, what is strange about what you see?

What's happening?

Our eyes are using light to see various objects all the time, but when this light travels through different mediums (such as water & air) it changes direction slightly. Light refracts (or bends) when it passes from water to air. The straw looks bent because you are seeing the bottom part through the water and air but the top part through the air only. Air has a refractive index of around 1.0003 while water has a refractive index of about 1.33.

Practical Science Year 6

Topic: Light and the eyes

Find your blind spot

You will need:

Two symbols drawn on a piece of paper: a cross and a target




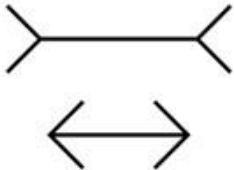
What to do:

1. Hold the paper up to your face, so that the cross is in front of your right eye.
2. The picture of the 'target' should be to the right of your face
3. Close your left eye. Focusing on the cross, slowly move the paper away from your face.
4. As you move the page away from your face, you notice that at some point you can't see the 'target' within your peripheral vision; you've found where your blind is!
5. Why Does This Happen?
6. The blind spot occurs due to the structure of the eye. When light travels it reaches the back of the eye, it's wavelength is interpreted by the group of cells collectively called the retina.
7. In the middle of the retina is an area called the fovea, a place where many blood vessels are located. As there are no cells that detect light within the fovea, there is a natural 'blind spot' created in your field of vision. Luckily your eye moves up to 3 times a second, adjusting for this blind spot!

<http://www.fizzicseducation.com.au>

Thinking Skills

Year 6 Pure Holy

<p>Light & the eyes 1</p> <p>Explain this optical illusion 2 ways.</p> 	<p>Light and the eyes 2</p> <p>Use a ruler to find out which horizontal line is shortest.</p> 
<p>Light and the eyes 3</p> <p>Make an improvement to a pair of sunglasses.</p> <p>Draw your glasses and explain why they are unique.</p>	<p>Light and the eyes 4</p> <p>Invent something that would help a blind person.</p>
<p>Light and the eyes 5</p> <p>Design a piece of fabric that uses every colour of the rainbow.</p>	<p>Light and the eyes 6</p> <p>List 10 things that are transparent.</p>