Exploring materials: Teacher's topic guide

God is Truth Year 1

Using the senses to discover the truth

Spiritual Awareness: Using the senses to discern the truth

We can learn to discern what is real and what is counterfeit as we listen to God's voice and get to know God's word. Jesus said, "I am the Way, the Truth and the Life."

We use our senses to find out about the world around us. We use our spiritual ears and eyes to find out what God is saying. We can hear what God is saying to us, and God hears what we say to Him. We taste God's word by experiencing the reality of the message. God can touch us when we express our love to Him.

God's truth doesn't change. In the world of manmade and natural materials we see that materials have consistent properties. Glass is always glass. Wood is always wood. Diamonds are always diamonds. Sometimes there are attempts to make substitutes, to make an object look as if it's made of a particular material, but in fact it's not.

In the Christian life we need to be able to discern what is real and what is not; what is truth and what is not. In this unit of study students can test properties of materials to find out whether objects are real or substitute. In the same way we can use the Bible to test ideas to be true or not true.

Values: Our response to 'God is Truth'

- **Honesty** in all I say and do; never cheat, steal, lie or exaggerate
- **Trustworthiness:** Be true to our word and keep promises.
- **Faith** in Jesus and the word of God being the source of truth

Outcomes: Students will

- Classify materials from the natural world or man-made
- Identify various properties of materials that make them suitable for different uses.
- Identify material common objects are made from, e.g. wood, plastic, metal, glass
- Find out which materials float and which materials sink.
- Identify properties of wood, metal, rocks, plastics, pottery, glass, fabrics.
- Identify materials and objects that imitate other objects, e.g. plastic flower, plastic drinking cup (looks like glass).
- Observe reactions of magnets in free play and predict which materials will stick to a magnet.
- Predict results of experiments with floating and sinking.
- Use their senses to classify materials.

Bible stories and passages

Matthew 7:13-14 The broad and narrow way
Matthew 16:13-17 Jesus asks, "Who am I?"
John 10:1-8 The Good Shepherd. The sheep recognize His voice.
Matthew 7:15-21 Wolves in sheep's clothing
1 Kings 18:1-40 Which is the true God? God of Israel or Baal?
The parables – Jesus told the people listening that they must listen with special ears in order to understand the truth.
Psalm 115:4-7 Those who worship idols: "Their gods are made of silver and gold formed by human hands. They have mouths but cannot speak, and eyes but cannot see. They have ears

but cannot hear, and noses but cannot smell. They have hands but cannot feel, and feet but cannot walk."

Bible verses:
Psalm 119:103 How sweet are your words to my *taste*, yes sweeter than honey to my mouth.
Psalm 34:8 *Taste* and see that the Lord is good.
John 14:6 Jesus is the Way, the Truth and the Life.
Isaiah 42:8 "I alone am the Lord your God." (GNB)
Matthew 11:15 "He who has ears, let him hear."
John 5:24: Jesus said, "He who hears My words, and believes in Him who sent Me, has eternal life."

Key Questions
How do I know when something is true?
What is the opposite to true?
How can God help me to know the truth?
Who is our shepherd? Who are His sheep?
How can the sheep get to know the voice of the shepherd?
What did Jesus mean when He said, "Whoever has ears, let him hear"?
What did Jesus mean when he spoke about people who had *eyes* but couldn't see?
How did Jesus use *touch* when He healed people?
What does it mean to *taste* the words of the Lord?

Activities
- List the five senses and the body parts associated with these.
- Classify objects using the senses.
- Discuss how you can't always tell by sight what an object is made of e.g. glass and plastic, and have to use other senses such as touch and sound.
- Test items / materials / substances through safe and appropriate sensory activities e.g. Find out whether the following objects are real or artificial: **flowers** - real and artificial; **glass** or plastic drinking vessel; **fabrics** – natural and synthetic.
- Use magnets to detect metals.
- Collect a range of materials made from wood, metal, rocks, plastics, pottery, glass, fabrics and identify their properties using observation, prior knowledge and experimentation
- Make a chart and list the properties

  WOOD: Comes from trees; Strong and flexible; Used to make paper; can float
  METAL: found in the ground; sometimes mixed with rocks; strong, hard shiny
  ROCKS: found in the earth; found on the beach; some are hard e.g. granite, some are soft e.g. chalk

  PLASTICS: made from oil; can be coloured; strong; can be made into any shape; waterproof
  POTTERY: made from clay which is shaped then heated to make it hard; strong but can shatter
  GLASS: man made; can be made into different shapes; hard and can shatter; waterproof
  FABRICS: made from fibres woven together; some are natural e.g. silk and cotton; some are man-made e.g. nylon; they are used to make clothes
- Classify materials according to natural or man-made.

- Discuss how different properties make materials suitable for different uses
- Discuss where you might use each material and where the materials are found
- Play the 'animal, vegetable, mineral' game where someone is chosen to think of an object. Children take turns to ask this person a question with the goal of guessing the object. The questions asked must be questions than can be answered with 'yes' or 'no', e.g. "Is it animal?" "Is it vegetable?" Is it mineral?" Is it made of plastic?" "Is it made of metal?" etc.
- Conduct floating and sinking experiments and ask children to predict whether a material will float or sink.
- Conduct experiments to see if a material is porous or waterproof.
- Draw a picture of something made of your favourite material, and write a sentence about its properties.
- Make a model of a river using the natural things (For example, leaves for the river, seeds or twigs for trees)
- Make a model of a building using man made things. (For example, plastic blocks, cardboard boxes.)
- Detect **smells** of substances while blindfolded or eyes closed, e.g. lemon, orange, onion, perfume, spice.
- Identify objects in a bag by **feeling**.
- Feel water at different temperatures – ice, cool, warm
- Discuss *Braille* and how it helps blind people to read. Make a message in *Braille* by pricking holes in thick aluminium foil, e.g. a pie plate.
- Discuss the needs of blind people.
- Discuss and build a vocabulary for different textures – soft, hard, spongy, rough, smooth.
- **Listen** to and identify various sounds.
- **Observe** features of materials using the eyes.
- Make a chart to show how we found out about a particular item.
- Discuss dangers of eating or drinking things without knowing what they are, e.g. pills; cleaning agent in a wrong bottle.

Magnets

- Supply a selection of different sizes and types of magnets (e.g. horseshoe, bar, ring), and a selection of objects (both magnetic and non-magnetic, made from wood, plastic and metals)
- Discuss what students already know about magnets and ask questions about them, e.g. Does everything made of metal stick to a magnet?
- Free play - children explore a variety of different magnets and objects (both magnetic and non-magnetic) including paperclips in jars/bowls of water. Can they get the paperclip out of the water without getting their hands wet? Experiment with different kinds of metal – aluminium, copper, steel
- Ask children to draw up a table to record their predictions and findings, e.g. Will a plastic cube object to a magnet or not?
- Use magnets to separate impurities, e.g. pencil shavings from a tin of pins; sawdust from iron filings
- Fishing game - the children use magnetic fishing rods (ring magnets tied to string) to fish for cardboard fish with a paperclip attached.

- Strength - using paperclips children find out if all magnets can hold the same number of paperclips. Are big magnets always stronger than small magnets?
- Make a magnet by stroking and magnetic induction

Thinking Skills: Magnets

Assessment

- can draw an object made of plastic, wood, glass, metal
- can draw an object that can be picked up by a magnet
- can draw the body parts associated with the five senses
- What has been learned from the study of senses about God and the Bible?

Learning Connections:
Literacy: Discover the difference between stories that are fact and fantasy
Mathematics: Use the senses for counting – touch and sight for counting objects; hearing for counting sounds
Social Studies: awareness of the needs of people in the community who have visual or hearing impairments
Health: safety with substances: toxic chemicals, toxic gas, drugs; safety with heat; look and listen before crossing the road
Art: Use different materials to create collage and constructions

Values education Year 1
God is Truth
Finding out what is true
(Life-long learning)

To find out what is true we need to …

- Listen to others
- Learn from people who know what is true
- Find out what the Bible says about the things we are learning

How could you find out if the following things are true?
A friend tells you that there is no school tomorrow, but you haven't heard about it. (Ask your teacher)
A friend tells you that fizzy drinks do not rot your teeth. (Ask a dentist)
Your Sunday School teacher tells you that God made the world. (Listen to what God says in the Bible.)
Your teacher tells you that an apple will float in water. (Do an experiment.)

Discussion
Who should we believe?
What is the problem with believing everything?

Bible passages
- Proverbs 2:6 Only the Lord gives wisdom. Knowledge and understanding come from Him.
- Matthew 7:13-14 The broad and narrow way.
- John 14:6-7 I am the way, the truth, the life.
- Acts 4:12 There is no other name by which we are saved.
- John 10:1-18 The Good Shepherd.
- Matthew 7:15-21 Wolves in sheep's clothing.
- John 18:37 Everyone that is of the truth hears my voice.

Practical Science Year 1

God is Truth

Topic: Exploring materials

Sink or Float?

Sometimes the best way to find out if something will sink or float is just to try it. Gather up some objects from around your house to test their sinking or floating abilities. Make sure all of the items you pick can get wet!

What You Need:

- a large container of water (use a bucket, or fill up a sink)
- lots of small objects of different weights and materials (plastic, metal, wood, foil, Styrofoam)
- a few larger objects
- worksheet
- pen

What You Do:

- Look at the objects you collected. Draw a picture of each one in the boxes on the left side of the worksheet.
- Make a prediction about each object - do you think it will sink or float in the water? (To make a prediction means to say what you think will happen.) Mark your prediction on the worksheet for each item (circle float or sink).
- Drop the objects into the water one at a time. Watch what happens to each one. Did you predict correctly? Circle "float" or "sink" next to each object on the sheet to show the results of your experiment.

What Happened:

Even though some of your items seemed very light (things like a paperclip or a button), they still sank in the water. Some objects that might have seemed sort of heavy (like a wooden block) probably floated. That is because whether an object sinks or floats in water doesn't just depend on its weight or size. It also depends on its density. Density is a measure of how solid something is. All things are made up of tiny particles called molecules. If the molecules inside an object are very close together, the item is solid, or dense. If the molecules are farther away from each other, the object is less dense, or less solid. An example of a very dense item is a penny. A cork is less dense.

A coin, paperclip, or button sank because the materials they are made of (metal or plastic) had more density than water. (Their molecules are closer together than water molecules are.) A cork, piece of wood, or Styrofoam floated because those materials have less density than water. All the objects that were less dense than water floated in the water! Objects that had more density than the water sank.

http://www.hometrainingtools.com/a/sink-and-float-science-projects

Practical Science Year 1

Topic: Exploring Materials

Does an Orange Float or Sink?

Does an orange float or sink when placed in water? Seems like a fairly straight forward question, but is it? Give this fun density science experiment for kids a try and answer the question while learning a unique characteristic of oranges.

What you'll need:

- An orange
- A deep bowl or container
- Water

Instructions:

1. Fill the bowl with water.
2. Put the orange in the water and watch what happens.
3. Peel the rind from the orange and try the experiment again, what happens this time?

What's happening?

The first time you put the orange in the bowl of water it probably floated on the surface, after you removed the rind however, it probably sunk to the bottom, why?

The rind of an orange is full of tiny air pockets which help give it a lower density than water, making it float to the surface. Removing the rind (and all the air pockets) from the orange increases its density higher than that of water, making it sink.

Density is the mass of an object relative to its volume. Objects with a lot of matter in a certain volume have a high density, while objects with a small amount of matter in the same volume have a low density.

http://www.sciencekids.co.nz/experiments/orangefloatorsink.html

Practical Science Year 1

Topic: Exploring materials

Magnets

What you need:

- Clear plastic container
- Magnet
- Metal objects like hair pins, nuts and bolts, paper clips and pipe cleaners
- Non-metal objects like pencils, paper, carboard, or objects made of plastic or glass

Directions:

- Place the collection of metal and non-metal objects into the container.
- Allow the students to take turns using a magnet. Allow them to experiment with free play.
- Then ask them to predict which objects will stick to the magnet.
- Why did the pipe cleaners stick to the magnet?
- Help them to draw conclusions.
- Record results

    - Place ONLY iron objects in a flat glass dish.
    - Hold up the dish and ask them to move objects along holding the magnet under the glass.
    - Help them to draw conclusions.
    - Record results

Why does it happen?

A magnet gives out a magnetic field (a force) that attracts certain metals: iron, cobalt, nickel.

http://www.schoolofdragons.com/how-to-train-your-dragon/science-activities/science-activities-kindergarten

Further extension:

Were some objects too heavy for the magnet?
A magnet can be weak or strong. What does this mean?

Make your own magnet

You can make a magnet from your (permanent) magnet.
Take a nail and rub it over the magnet in one direction 50 times.
See if it picks up paper clips.

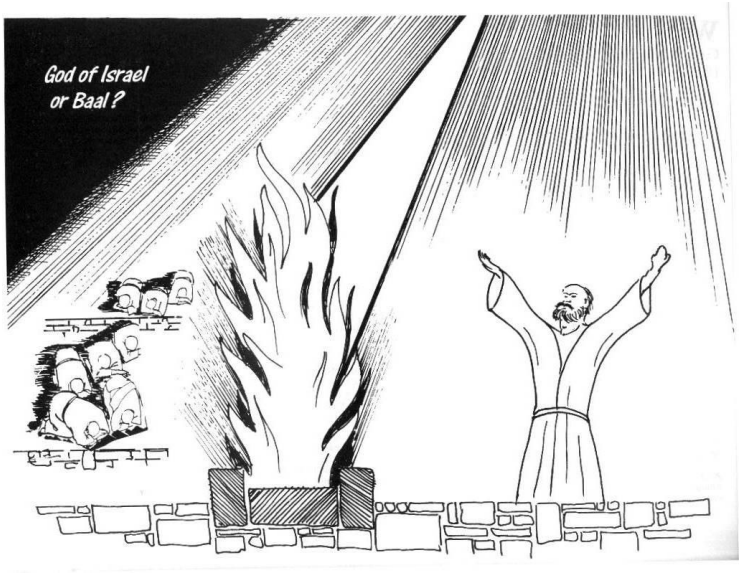
Art Year 1

God is Truth

Topic: Exploring materials

Biblical connection: We can use our five senses to find out about materials. We can use our five senses to find out whether something is true or not true.

Bible art as a wall display: 1 Kings 18:1-40 Elijah and the prophets of Baal. Make a mural of the two stone altars, one without fire and one with fire. "Who is the true God?"



1. **Exploring the properties of clay**

- What can you do with a lump of clay?
- Use the finger and thumb to pinch it.
- Press into it with knuckles.
- Roll it into a ball
- Pull it apart, join it back together, stretch it, flatten it
- Make a hollow in the lump.
- Create the following shapes: tall, thin, round, fat, flat, curled, wide, twisted, short.
- Make a snake.

1. Explore the properties of paint

- Thick paint, (thickened with flour or starch)
- Thin paint can be blown with a straw

2. **Explore the properties of paper**

Students can experiment with the following techniques using cut paper to build up a picture:

- Cutting paper strips
- Coiling paper strips
- Fringing
- Making a fan (concertina folding)
- Making a coil (cutting around and around a circle shape in a snail shell formation)

3. Explore the properties of construction materials such as cardboard, plastic and wooden sticks.

Thinking Skills

Yr 1 Truth

Magnets 1 The family knives and forks have fallen into a pile of rubbish. Invent a machine that will separate and sort out the knives and forks from the rubbish.	**Magnets 2** You have been locked out of the house and the spare key is inside on the key rack. Work out how to get into the house using: •a magnet •a broom •a piece of wire
Magnets 3 Find 5 things in common between: **a magnet** and **a drink bottle**	**Magnets 4** Find 10 different uses for a magnet.
Magnets 5 Invent a game that uses a magnet on a piece of string.	**Magnets 6** Design a new magnetic toy by combining: a magnet and a steel can