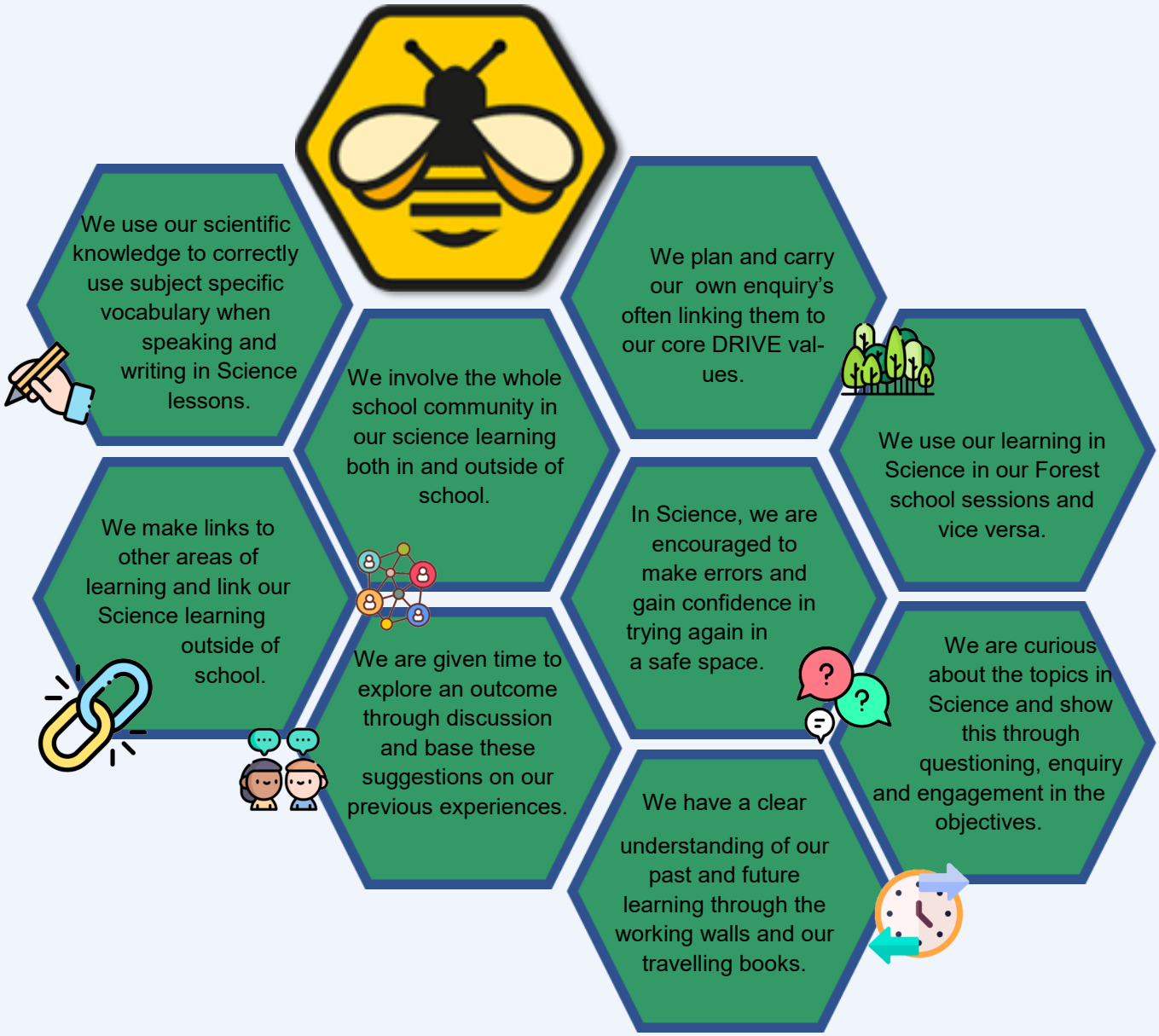
Science at Bispham Drive Junior School

A scientist observes, questions, creates hypotheses, experiments, records data, analyses data and communicates to others. All children can learn to be scientists by following their own natural curiosity. At Bispham Drive, staff facilitate and foster these skills in order for children to flourish and become scientists of the future.



Autumn 1: Electricity	Autumn 2: Light	Spring 1: Living things and their habitats	Spring 2: Animals including humans	Summer 1: Evolution and inheritance
To associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit To compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches To use recognised symbols when representing a simple circuit in a diagram.	To recognise that light appears to travel in straight lines To use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye To explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals To give reasons for classifying plants and animals based on specific characteristics.	To identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood To recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function To describe the ways in which nutrients and water are transported within animals, including humans.	To recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago To recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents

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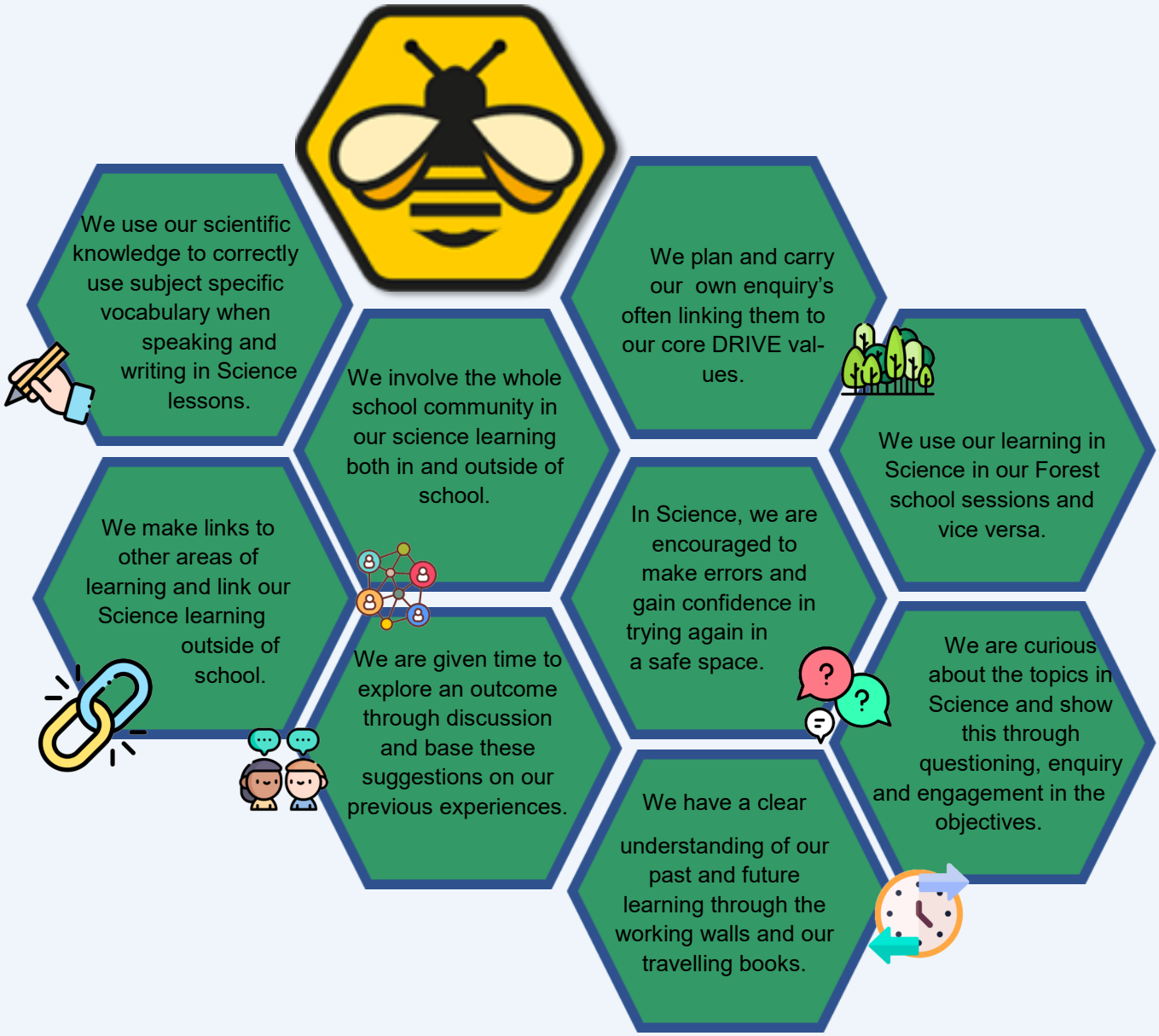

Autumn 2: Animals including humans	Spring 1: Earth and Space	Spring 2: Forces	Summer 1: Properties and changes of materials	Summer 2: Living things and their habitats
To describe the changes as humans develop to old age	To describe the movement of the Earth, and other planets, relative to the Sun in the solar system To describe the movement of the Moon relative to the Earth To describe the Sun, Earth and Moon as approximately spherical bodies To use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky	To identify the effects of air resistance, water resistance and friction, that act between moving surfaces To recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object	To compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets To know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution To use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating To give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic To demonstrate that dissolving, mixing and changes of state are reversible changes To explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda	To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird To describe the life process of reproduction in some plants and animals.

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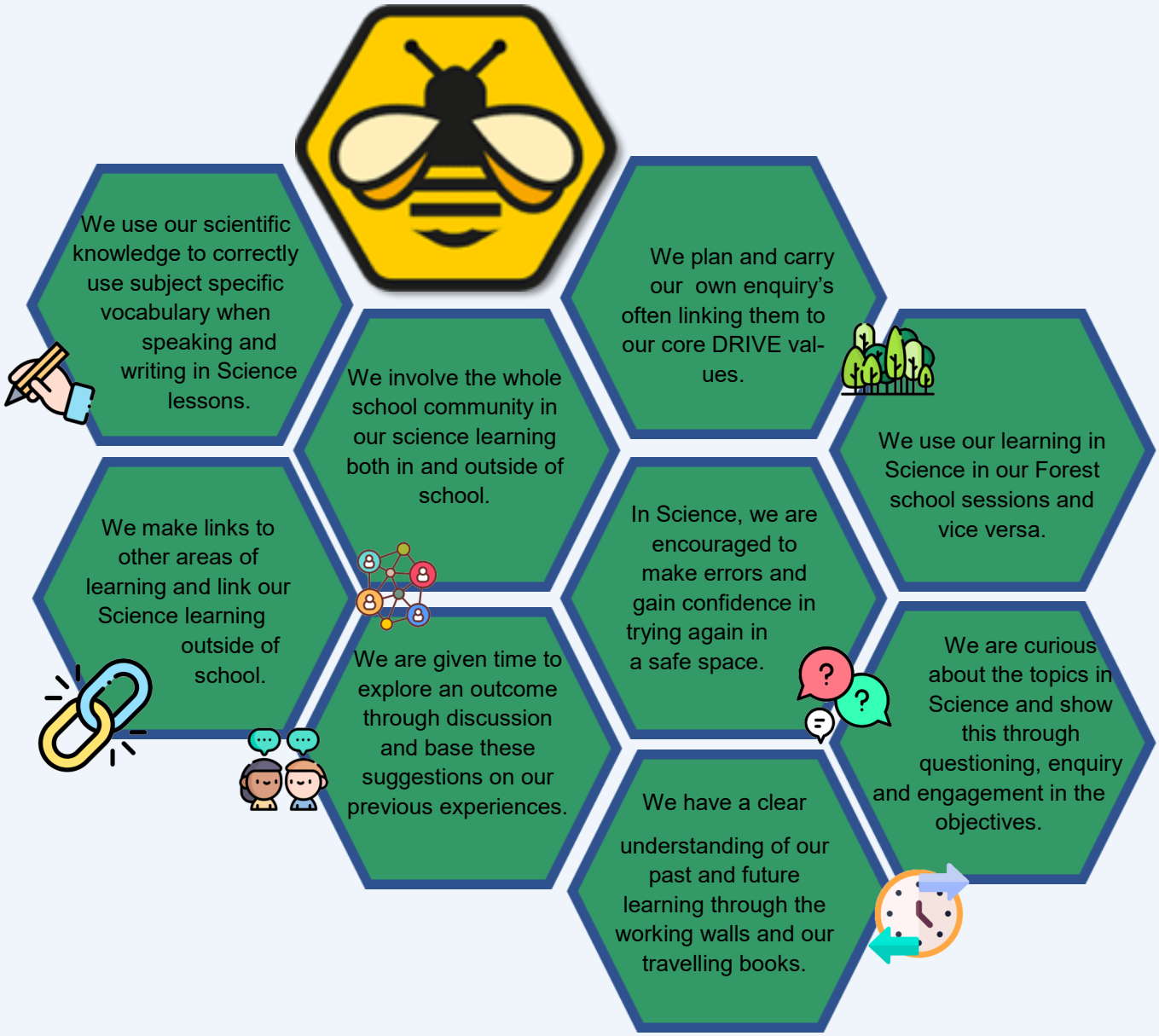

Autumn 2: Living things and their habitats	Spring 1: Animals including humans	Spring 2: Sound	Summer 1: States of matter	Summer 2: Electricity
To recognise that living things can be grouped in a variety of ways To explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment To recognise that environments can change and that this can sometimes pose dangers to living things.	To describe the simple functions of the basic parts of the digestive system in humans To identify the different types of teeth in humans and their simple functions To construct and interpret a variety of food chains, identifying producers, predators and	To identify how sounds are made, associating some of them with something vibrating To recognise that vibrations from sounds travel through a medium to the ear To find patterns between the pitch of a sound and features of the object that produced it To find patterns between the volume of a sound and the strength of the vibrations that produced it To recognise that sounds get fainter as the distance from the sound source increases.	To compare and group materials together, according to whether they are solids, liquids or gases To observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) To identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	To identify common appliances that run on electricity To construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers To identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery To recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit To recognise some common conductors and insulators, and associate metals with being good conductors.

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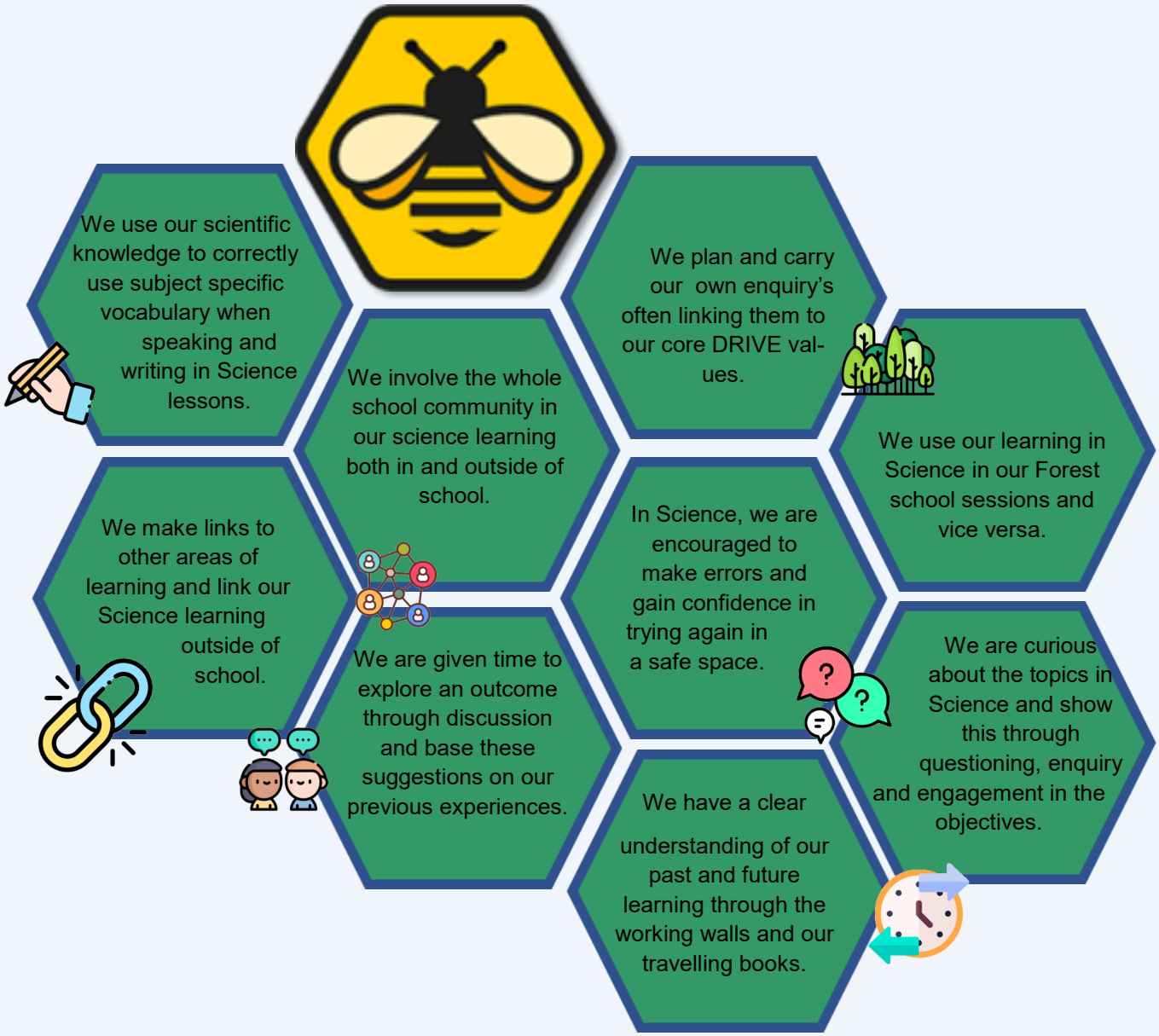

Autumn 1: Light and shadow	Autumn 2: Animals including humans	Spring 1: Animals including humans	Spring 2: Plants	Summer 1: Rocks and soils	Summer 2: Forces and magnets
To know that light is needed in order to see things To know that dark is the absence of light To know that light is reflected from surfaces To know that shadows are formed when the light from a light source is blocked by an opaque object To know that light from the sun can be dangerous and that there are ways to protect their eyes To know that there are patterns in the way the size of a shadow can change. To know that changing the angle and distance of the light source can alter the shadow	To identify that humans and some other animals have skeletons and muscles for support, protection and movement.	To identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat	To identify and describe the functions of different parts of flowering plants: roots, stem/ trunk, leaves and flowers To explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant To investigate the way in which water is transported within plants To explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties To describe in simple terms how fossils are formed when things that have lived are trapped within rock To recognise that soils are made from rocks and organic matter.	To compare how things move on different surfaces To notice that some forces need contact between two objects, but magnetic forces can act at a distance To compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials To observe how magnets attract or repel each other and attract some materials and not others To describe magnets as having two poles To predict whether two magnets will attract or repel each other, depending on which poles are facing.

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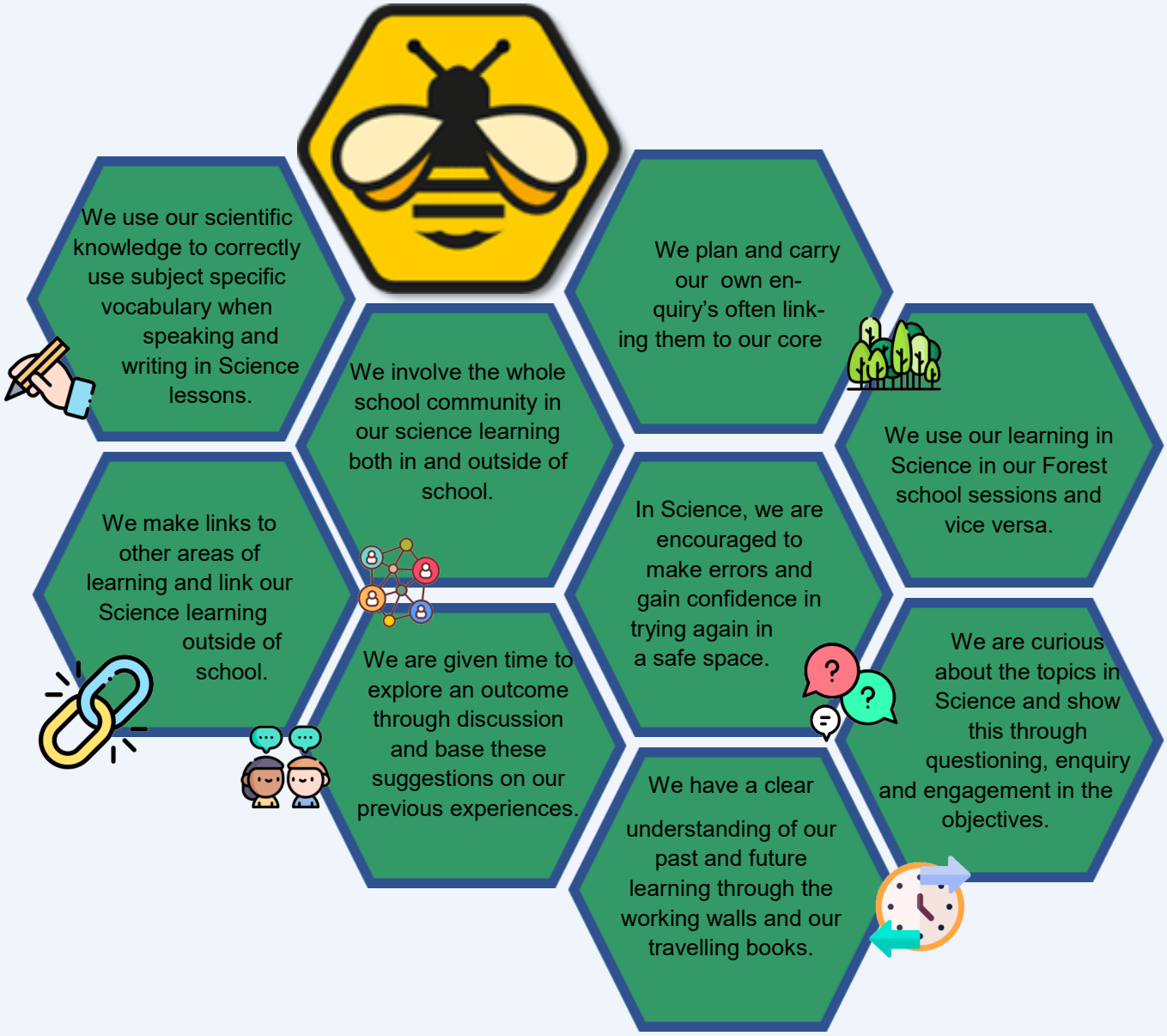

The Vision for Science

Science is a body of knowledge built up through experimental testing of ideas and a practical way of finding answers to questions we ask about the world around us.

At Bispham Drive Junior School, it is about developing children's ideas and ways of working that enable them to make sense of the world through investigation. Science has changed our lives and it is vital to the world's future prosperity. Therefore, all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. We believe that a broad and balanced science education is the entitlement of all, regardless of ethnic origin, gender, class, aptitude or disability. Our vision in science is to encourage curiosity in children so that they ask questions that fuel explorations and investigations about the universe we live in.

What is Working Scientifically?

Questioning

Scientific enquiry – observing changes, finding patterns, grouping and classifying, fair testing and researching using secondary sources

Drawing conclusions based on data and observations

Using evidence to justify ideas