Project: *Dynamic Dynasties- What can we learn about the world today by studying an ancient civilisation?*

Big Questions:

Term 1

Why did the Shang Kings need to write?
Why does my shadow length change over the day?
What are the advantages and disadvantages of different methods of casting?
How do we describe our location locally and globally?

Term 2

Which is more reliable- History or Archeology?
Can we vary the effects of electricity?
How can we use pneumatics to move an object?
Why are different places on Earth so different to each other?

Links to Learning Behaviours

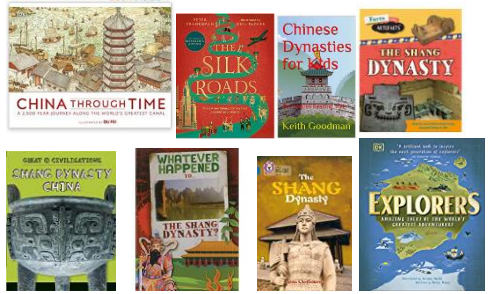
Term 1- Self Manager

- I can organise things well, including resources and others, when working independently.
- I appreciate how learning can happen from mistakes.
- I can use success criteria to check on how successful a task has been.
- I am happy to persevere even when the solution is not easily at hand..
- I cope well with additional pressure.
- I am confident and capable when allowed to organise my own time and space.
- I can call on a range of strategies to help me overcome a problem.

Term 2- Effective Participator

- When making suggestions, I can break down practical ideas into manageable steps.
- I am prepared to discuss and debate issues until a sensible compromise is reached.
- I am able to act as an ambassador for class/school etc.
- I can act as a 'buddy' or mediator.
- I can act as an advocate for views and beliefs that may differ from my own.
- I show maturity when acting as a mediator.
- I can be a good role model for good learning behaviour.
- I can cope with criticism and learn from it.

Reading across the curriculum



Planned visits/visitors to support children's understanding.

Remote workshop with the Ashmolean to look at the Shang Dynasty in Term 1

Link to our core Chrsitian Values and fundamental British Values

Belonging
Know that a society is all the people in a community or group and that societies give their members both rights and responsibilities.

Understand that we can create the Culture of our classroom through what we decide to value.

Compassion
Reflect on experiences of people in the past through both a lens of modern values and those of the past.

Understand that difficulties are a part of life and show compassion for others when they find things challenging.

Resilience
Work to make iterative improvements to our work; understand that many processes are more complicated than just 'right' or 'wrong' and look for ways to make gradual and continual improvement.

Set our own goals for our learning and monitor our progress towards them.

Cross curricular skills

Ask disciplinary appropriate questions and plan how to answer them, including planning how best to use our own time to do this and how we will share our learning.

Compare and contrast sources of information, including in terms of their reliability, in order to draw our own conclusions.

Draw togetherstrands of learning from across the curriculum to develop our understanding of different cultures. (To do this we need to understand that Culture is the language, inventions, ideas and art of a group of people).

Identify how culture affects behaviour and attitudes.

Understand the role of both mistakes and iterative change in improving our performance.

Use observational skills to learn from first hand experiences.

Five Fundamental Facts to learn across the project

GEOGRAPHY- Our World

Accurate grid references identify the position of key physical and human features.

Scale is the relationship between the size of an object on a map and its size in real life

Compass points can be used to describe the relationship of features to each other, or to describe the direction of travel

Contour lines show the elevation of the land, joining places of the same height above sea level.

The Prime (or Greenwich) Meridian is an imaginary line that divides the Earth into eastern and western hemispheres.

Climate zones have the same average weather conditions, such as temperature, rainfall and seasons. The climate determines the

HISTORY-Shang Dynasty

The Shang Dynasty was a Bronze Age civilization and existed from 1600BC-1046BC (around the same time as the Egyptian Old Kingdom)

The Shang Dynasty is the first Ancient Chinese Civilization that there is contemporary written evidence of

The Shang people lived in towns and villages along the Yellow River which they used to irrigate their fields.

There was a strict social hierarchy with the king at the top; he was believed to have the 'Mandate of Heaven'.

Oracle bones are a key archeological artefact that can be used to make deductions about daily life during the Shang Dynasty

SCIENCE – Light

Animals see light sources when light travels from the source into their eyes.

Animals see objects when light is reflected off that object and enters their eyes.

Light reflects off all objects (unless they are black).

Non shiny surfaces scatter the light, so we do not see the beam.

Light travels in straight lines.

SCIENCE- Electricity

Batteries are a store of energy. This energy pushes electricity round the circuit. When the battery's energy is gone it stops pushing.

Voltage measures the 'push.'

The greater the current flowing through a device the harder it works.

Current is how much electricity is flowing round a circuit.

When current flows through wires heat is released. The greater the current, the more heat is released.

Art – 3D Art- Casting

A taotie is a creature in Chinese mythology which features on many Shang artefacts.

During the Shang Dynasty, craftspeople used a complex technique called piece-mould casting to make highly-decorated bronze vessels and objects.

Silicone casting fills a pre-made mould with plaster of paris.

Clay casting means you can make a cast of a natural object by making an indent of the object in the clay

Paper casting uses layers of damp paper over the object to be cast.

DT – Mecchanisms

Pneumatics uses compressed gases to move an object

A design brief details what elements are needed

A prototype is a first go at making an idea and allows you to look for difficulties you may not have expected

Iterative improvement means improving a little at a time

A design brief can be used to evaluate the effectiveness of a design

		vegetation, or plants, of an area.					
		VOCABULARY- Big 6 **Contour line** **Latitude** **Longitude** **Prime Meridien** **Biome** **Vegetation zone**	VOCABULARY- Big 6 Artefacts Decline Dynasty Oracle (bones) Prosperity Settlement	VOCABULARY- Big 6 Opaque Reflect Straight line Source Translucent Transparent	VOCABULARY- Big 6 Battery Cell Circuit Diagram Symbol Voltage	VOCABULARY- Big 6 Bronze Cast Finishing Molten Motif Mould	VOCABULARY- Big 6 Compress Iterative Pneumatic Pressure Prototype Valve

Geography

Place

Describe and understand key aspects of human geography, including: types of settlement and land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water.

Describe and understand key aspects of physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains, volcanoes and earthquakes, and the water cycle.

LOcation

Identify the position and significance of latitude, longitude, Equator, Northern Hemisphere, Southern Hemisphere, the Tropics of Cancer and Capricorn, Arctic and Antarctic Circle, the Prime/Greenwich Meridian and time zones (including day and night).

Locate the world's countries, using maps to focus on Europe (including the location of Russia) and North and South America, concentrating on their environmental regions, key physical and human characteristics, countries, and major cities.

Name and locate counties and cities of the United Kingdom, geographical regions and their identifying human and physical characteristics, key topographical features (including hills, mountains, coasts and rivers), and land-use patterns; and understand how some of these aspects have changed over time.

Human and Physical Geography

Understand geographical similarities and differences through the study of human and physical geography of a region of the United Kingdom, a region in a European country, and a region within North or South America.

Fieldwork

Use fieldwork to observe, measure, record and present the human and physical features in the local area using a range of methods, including sketch maps, plans and graphs, and digital technologies.

Use maps, atlases, globes and digital/computer mapping to locate countries and describe features studied.

Use the eight points of a compass, four and six-figure grid references, symbols and key (including the use of Ordnance Survey maps) to build their knowledge of the United Kingdom and the wider world.

Breadth of study

Understand the processes that give rise to key physical and human geographical features of the world, how these are interdependent and how they bring about spatial variation and change over time.

Prior knowledge

Year4- Climate and Weather unit (Term 3 Year ¾ cycle A), Place and Interconnection (Term 2, Year 3.4 cycle A)

Year 5 – Farming and agricultural use in 'Sow and Grow' term 3 Cycle A), also Interpreting Geographical Sources

All children should understand how grid references work, and the first sessions will recap this prior knowledge before

How do we describe our location locally and globally?

What are ordnance survey maps and how are they used? Recap on previous knowledge about maps. Look at ordnance survey landranger map of local area. Use maps to locate and describe the position of physical and human features. Mark their own work, recap on key learning.	How do contour lines show elevation, mountains and valleys? Recap on previous lesson about maps. Look at ordnance survey landranger map of local area. Locate and describe areas with contour Mark their own work, recap on key learning.	How do compass points, grid references and scale help us interpret maps? Recap on previous knowledge. Look at ordnance survey landranger map of local area. Use maps to locate and describe the position of landmarks in relation to each other using scale and compass direction. Mark their own work, recap on key learning.	What are time zones? Identify time zones around the world. Apply understanding by using a map of time zones. Discuss implications of time zones on large countries. Mark their own work, recap on key learning.	How do climate zones and biomes differ? Show presentation on climate zones, discussing any unknown words, focus on polar, temperate, Mediterranean, desert and tropical Display the Climate zones map and ask questions about the locations of the climate zones and key features, including distance from the equator, temperature and precipitation. Mark their own work, recap on key learning.	What are vegetation belts and how do they influence the animals that live there? Recap on previous learning on climate zones. Identify similarities and differences between climate zones and vegetation zones. Apply knowledge by answering questions. Mark their own work, recap on learning.

Why are different places on Earth so different to each other?

What are the similarities and differences between the names of vegetation belts and biomes?	How does human and physical geography vary between continents?	What is a capital city and where are they located? Recap on previous learning.	How do we use scale and compass points to describe relative location and position?	What is settlement hierarchy and how does it help us understand the features of settlements?	Assessment week for unit.

building on it to look at the earth as a whole.	Recap on previous learning on climate zones and vegetation zones.. Identify biomes and ensure children understand this key word. Children identify similarities and differences between biomes and climate zones and vegetation zones by answering questions. Mark their own work, recap on learning.	Display map of the world and recap on prior learning- what do children already know about the world, continents and capital cities. Provide children with European Data diagram, teaching how to interpret. Children use the data to sort information cards about countries and capitals. Mark and discuss learning together.	Display world map with capital cities. Discuss what features they might expect to see there and why. Children select a capital city to write a geographical fact file about. Peer assess work against previous knowledge and discuss common misconceptions.	Recap on previous learning on maps. Using Collins Junior Atlas, children to describe key towns and cities in the UK relative to each other. Check and mark each others work. Discuss common misconceptions.	Recap on towns and cities identified in previous lesson. How do we know which are towns and cities in an atlas? Display Settlement hierarchy, and discuss difference. Apply their understanding to answer the following questions: How do you think a settlement might change over time? How would a settlement change if the population grew? How might a settlement change if an industry was built nearby?' Discuss answers.	

History

NC:

-Pupils should continue to develop a chronologically secure knowledge and understanding of British, local and world history, establishing clear narratives within and across the periods they study. They should note connections, contrasts, trends over time and develop the appropriate use of historical terms. They should regularly address and sometimes devise historically valid questions about change, cause, similarity and difference, and significance. They should construct informed reponces that involve thoughtful selection and organisation of relevant historical information. They should understand how our knowledge of the past is constructed from a range of sources.

Pupils should be taught about the achievements of the earliest civilizations – an overview of where and when the first civilizations appeared and a depth study of one of the following: ~~Ancient Sumer; The Indus Valley; Ancient Egypt~~;**The Shang Dynasty of Ancient China.**

Prior Knowledge

Year 5-
Depth study of Ancient Egypt

Year 6-
Depth study of Ancient Greece

All-
LKS2 Study of Stone Age-Iron Age included an overview of the Bronze age.

Why did the Shang Kings need to write? (KS2 History 'The Shang Dynasty')

What was the Shang Dynasty?	**What was it like in settlements around the Yellow River Plain?**	**How did Shang farmrs provide food for their society?**	**What were the religious beliefs of the Shang Dynasty?**	**What was the Shang writing system like?**	**What did the rulers of the Shang Dynasty do?**	**What did the rulers of the Shang Dynasty do?**
Find where the Shang Dynasty was located *Ask Historical questions* *Research key facts about the Shang* *Dynsaty and consider how historians know these facts*	*Consider the benefits and challenges of settling near a large river.* *Understand how Shang cities were structured and organised* *Explain how social hieracy affected whether Shang residents lived inside or outside the village walls.*	*Investigate Shang farming and irrigation techniques* *Know what foods were grown by Shang farmers* *Give examples of what people might have eaten*	*Use a range of sources to find out about Shang religion* *Understand the different types of gods that Shang people worshipped* *Give examples of ways in which Shang people appealed to the gods or ancestors for help*	*Understand the importance of writing in the Shang Dynasty* *Give examples of how Shang people used writing* *Explain what historians and archeologists can learn from Oracle bones*	*Investigate the role of Shang Kings* *Learn the legend of the first Shang Kings*	*Know why warfare was a part of daily life for Shang people* *Participate in a historical debate about the way that foreigners were treated using knowledge of the period*

Which is more reliable- History or Archeology? (KS2 History 'The Shang Dynasty')

What do archeological findings tell us about the Shang Dysnasty?	Why is Lady Fu Hao's tomb significant to hostorians?	Why did the Shang Dynasty fall in 1046BC?	How does The Shang Dynasty compare to other Bronze Age civilizations?	What is the legacy of the Shang Dynasty?	Which is more reliable as a way to find out about the past, written history or archeology?
Name and describe some Shang artfacts *Understand how historians make deductions from primary sources*	*Understand how royal tombs have contributed to our knowledge of the Shang Dynasty* *Explain who Fu Hao was and her significance to historians* *Know about Shang burial practices*	*Explain how the Shang Dynasty ended* *Understand some of the arguments for and against the rebellion of the Shang peasants* *Participate in a class debate using historical evidence*	*Recall knowledge of Bronze Age Britain.* *Compare and contrast daily life for Shang people and Bronze Age Britons.* *Describe and suggest reasons for similarities and differences.*	*Review major events during the Shang Dynasty period* *Consider how events, inventions, cultural practices, stories, discoveries etc. continue to influence modern* *China and further afield.* *-Personal project to investigate an area of interest.*	*Demonstrate understanding that one of the most significant features of the Shang Dynasty was its use of writing, which provides us with a written record that does not exist for any preceeding dynasties. Justify, with evidence, how this written record supports or challenges what we can learn from archeology.*

Science- Light (Term 1)

NC:
Recognise that light appears to travel in straight lines.
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.
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.
Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
Know how simple optical instruments work, e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.

Prior Knowledge

LKS2
•Recognise that they need light in order to see things and that dark is the absence of light.
•Notice that light is reflected from surfaces.
•Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.
•Recognise that shadows are formed when the light from a light source is blocked by a solid object.
•Find patterns in the way that the sizes of shadows change.

Why does my shadow length change over the day? (PSTT Y6 Light)

What is light?

Light is a form of energy that travels as waves.

Darkness is the absence of light.

A light source produces light.

They can be natural or artificial.

How do we see?

Light from a source or reflected light enter the eye.

Vertebrates, such as mammals, birds and reptiles, have a cornea and lens that refracts light that enters the eye and focuses it on the nerve tissue at the back of the eye, which is called the retina.

Once light reaches the retina, it is transmitted to the brain via the optic nerve.

Sunlight contains harmful ultraviolet rays.

-How do our eyes adapt to different conditions?

What are shadows?

A shadow appears when an object blocks the passage of light.

Apart from some distortion or fuzziness at the edges, shadows are the same shape as the object.

The distortion or fuzziness depends on the position or type of light source.

-How does the size of an object affect the size of a shadow?
-How does the distance between the light and the object change the size of a shadow?
-How does the distance between the object and the size of the screen affect the size of a shadow?

Do all surfaces reflect light?

When light hits an object, it is absorbed, scattered, reflected or a combination of all three.

Shiny, smooth and light-coloured materials reflect light; dull, rough and dark-coloured materials absorb light.

-Which material is most reflective?

What colour is light?

The electromagnetic spectrum includes visible light that humans can see and light that humans cannot see.

Visible light is made up of coloured light that when mixed makes white light.

-Can you identify all the colours of light that make white light when mixed together?
-What colours do you get if you mix different colours of light together?

Plan and carry out independent investigation

e.g.

-How does the amount of aluminium foil scrunched affect how much light is scatters?
-How does the amount of polishing affect how well a piece of metal scatters light?
-How perfect are our mirrors? Do some scatter light more than others?

How does light travel?

Light travels in waves in straight lines.

Light waves in diagrams are drawn as straight lines with arrowheads that show the direction of travel.

(The angle at which light hits a reflective surface is the same angle at which it is reflected).

-How does the angle that a light ray hits a plane mirror affect the angle at which it reflects off the surface?
-How does a periscope/ microscope/ telescope work?

Do we all see the same?

Cones in the retina that are sensitive to red, green and blue light help us to see different colours.

When different combinations of cones are stimulated, we see different colours.

-Why do some people need to wear glasses to see clearly?

Why do shadows change?

The Sun creates day and night and shadows that move and change.

How would a solar eclipse be different if:
- The moon was a different size?
- The earth span faster or slower?
- The sun was larger or smaller?
- If the earth and moon where the same size but further away in the solar system?

Can you bend light?

Refraction is the bending of light as it passes from one transparent material to another.

Refracted light creates a visible spectrum when white light shines through a prism or raindrops.

The human eye depends on refraction to see

-What happens to light when it is shone through water?
How is this affected by putting glitter, salt or talc in the water?

How can we measure light?

-Is there a pattern to how bright it is in school over the day? And, if there is a pattern, is it the same in every classroom?

Present learning

Why does my shadow change over the day?

Science – Electricity (Term 2)

NC:

Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.
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.
Use recognised symbols when representing a simple circuit in a diagram.

Prior Knowledge

LKS2

•Identify common appliances that run on electricity.
•Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.
•Identify whether a lamp will light in a simple series circuit, based on whether the lamp is part of a complete loop with a battery.
•Recognise that a switch opens and closes the circuit and associate this with whether a lamp lights in a simple series circuit.
Recognise some common conductors and insulators, and associate metals with being good conductors.
•Know the difference between a conductor and an insulator, giving examples of each.
•Safety when using electricity.

Can we vary the effects of electricity? (PSTT Y6 Electricity)

What is electricity?	**What are the parts of an electrical circuit?**	**Do all batteries push as hard as each other?**	**What happens when you change circuit components?**	**Plan and carry out independent investigation**	**How has our understanding of electricity changed over time?**
An electric current is the flow of electric charge around a circuit. The electric current flows from the cell through all the components and back to the cell.	*A circuit needs a power source, such as a battery or cell, with wires connected to both the positive and negative terminals.* *Other components include lamps, buzzers or motors, which an electric current passes through and affects a response, such as lighting a lamp or turning a motor.* *When a switch is open, it creates a gap and the current cannot travel around the circuit.* *When a switch is closed, it completes the circuit and allows a current to flow all the way around it* -How would you group electrical components and appliances based on what electricity makes them do?	*Voltage is measured in volts (V) and is a measure of the difference in electrical energy between two parts of a circuit.* *The bigger the voltage, the more electrons are pushed through the circuit.* *The more voltage flowing through a lamp, buzzer or motor, the brighter the lamp, the louder the buzzer and the faster the motor.* - How does the voltage of a battery affect how much current is pushed? -How does the voltage of the batteries in a circuit affect the brightness of the lamp? -How does the voltage of the batteries in a circuit affect the volume of the buzzer?	Are all types of wires as good as conducting electricity? Does length of wire make a difference?	e.g. Does the type of circuit affect how the components work/long the battery lasts? Which type of fruit makes the best fruity battery? How does current affect heat? How does brightness of bulb change as the battery runs out? How can we measure how quickly a battery is used up? Does the temperature of a light bulb go up the longer it is on? Which make of battery lasts the longest?	Research lesson: Alessandro Volta(Electrical Battery) Nicola Tesla(Alternating Currents) What renewable ways can we generate electricity?
What is an electrical current?	**How do you record a circuit as a diagram?**	**What types of circuit can you make?**	**Can we make a bulb shine brighter?**		**Present learning**
Electric current is measured using an ammeter. *The force that pushes electric charge around a circuit, called the voltage, is measured using a voltmeter.*	*There are recognised symbols for different components of circuits*	-What types of circuit are there? -What are the dangers of a short circuit?	How does the length of time I leave the current flowing for affect the brightness of the bulb? How does number of bulbs affect the brightness of a bulb?		*How can we cary the effects of electricity?*

Art (TERM 1)

NC

Learn about great artists, architects and designers in history.
Improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials (for example, pencil, charcoal, paint, clay)
Evaluate and analyse creative works using the language of art, craft and design.

Prior Knowledge

LKS2

Know malleable materials, such as clay, papier-mâché and Modroc, are easy to change into a new shape.
Know rigid materials, such as cardboard, wood or plastic, are more difficult to change into a new shape and may need to be cut and joined together using a variety of techniques.
Experience of creating a 3-D form using malleable or rigid materials, or a combination of materials.
Know different techniques used to create a 3-D form from clay include coiling, pinching, slab construction and sculpting. Carving, slip and scoring can be used to attach extra pieces of clay.
Understand that mark making can be used to add detail to 3-D forms.
Use clay to create a detailed or experimental 3-D form.

What are the advantages and disadvantages of different methods of casting? (Cornerstones Taotie)

What are Taotie motifs?

Visual elements include line, light, shape, colour, pattern, tone, space and form.

A taotie is a creature in Chinese mythology. Its name translates to 'legendary voracious beast' because of its huge appetite. Its likeness was often used to decorate bronze goods in ancient China.

Line drawing helps historians to understand the technique and design of taotie motifs and other bronze objects.

Describe and discuss how different artists and cultures have used a range of visual elements in their work.

Introduce the children to the topic by asking them to read the Taotie Knowledge organiser. Invite them to share what they know, before displaying the Taotie picture cards. Ask the children to look carefully at the taotie motif and discuss the common visual features. Invite the children to choose one of the pictures to make a detailed line drawing in their sketchbooks. When complete, ask the children to share and compare their drawings, saying what they find interesting or unusual about the designs. Encourage them to find out more about the art and significance of the taotie by watching the YouTube videos in the useful links.

What different methods are there for casting? (3x lessons)

Bronze vessels were made using piece-mould casting. This was a complex process not used anywhere else in the world at that time.

Relief sculpture projects from a flat surface, such as stone.

High relief sculpture clearly projects out of the surface and can resemble a freestanding sculpture. Low relief, or bas-relief sculptures do not project far out of the surface and are visibly attached to the background.

We can create a relief form using a range of tools, techniques and materials.

Watch the YouTube video How ancient Chinese bronzes were created. Ask the children what they have found out about the process of bronze casting. Allow time to discuss the method, to ensure that children understand the technology and the technique. Explain that, although they will not be casting with bronze, they will be exploring some simple casting techniques. Organise the children into small groups and set up a workshop environment. Place the Casting instructions on tabletops with the appropriate resources and challenge the children to follow the instructions to complete the task. Support the children as they try out the different techniques, making sure that they have access to adult support. Encourage them to take photographs as they work, to document the processes that they use and record their work at different stages. At the end of the session, view the children's work in a shared forum and discuss what they found challenging or satisfying about each task.

How can we make our own reliefs?

A cast is an object made by shaping a material, such as metal or plaster, in a mould.

A mould is a hollow container used to give shape to another material, such as metal or plaster.

Casting is a process in which a liquid material is usually poured into a mould, which contains a hollow cavity of the desired shape.

The material is then allowed to dry and solidify.

The solidified part is also known as a casting, which is taken out of the mould to complete the process.

Invite the children to make taotie reliefs. Explain that each child will make a sample taotie cast that will be displayed together in a museum exhibition. Begin by showing the Taotie pieces presentation to demonstrate the technique. Allow time for the children to ask and answer questions for clarification, then provide the practical resources and the Taotie pieces instructions for children to follow. Allow time for the children to work on their pieces, encouraging them to test out their ideas and help each other with constructive criticism. When finished, invite the children to share and compare their experiences. Encourage them to answer questions, such as 'What did you find difficult? What tips do you have to make this method more effective? How was this method similar to or different from the other methods that you explored? What does this method enable you to achieve that other methods do not? How successful have you been in using this method? Are you pleased with your cast?'

What is the effect of adding watercolour to our work?

Ideas are the new thoughts and messages that artists have put into their work.

Methods and approaches are the techniques used to create art.

Compare and comment on the ideas, methods and approaches in their own and others' work.

When the children's work is fully dry, demonstrate how to add embellishment and create an authentic looking bronze cast by painting their pieces with watercolour paints. Children can add tints and tones using appropriate colour combinations, as seen in the Adding watercolour presentation. Ask the children how best to display their work in their exhibition, then invite others to come and view their work. Encourage the children to reflect upon their work and experiences. Give all children a copy of the Taotie question sheet to assess their learning.

DT- (TERM 2)

NC

Investigate and analyse a range of existing products.
Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages).
Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately.
Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

Prior Knowledge

All- KS1- mechanisms

Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products.
A mechanism is a device that takes one type of motion or force and produces a different one.
A mechanism makes a job easier to do.
Mechanisms include sliders, levers, linkages, gears, pulleys and cams.
Use a range of mechanisms (levers, sliders, wheels and axles) in models or products.

Y6-UKS2 Year A- bridge designs

Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
Various methods can be used to support a framework. These include cross braces, guy ropes and diagonal struts.
Frameworks can be built using lolly sticks, skewers and bamboo canes.
Build a framework using a range of materials to support mechanisms.

How can we use pneumatics to move an object? (Cornerstones Moving Mechanisms)

What are pneumatic mechanisms?

Pneumatic systems use energy that is stored in compressed air to do work, such as inflating a balloon to open a model monster's mouth.

These effects can be achieved using syringes and plastic tubing.
A pneumatic system uses air to exert a force.

This force is used in pneumatic jacks to lift vehicles, in paint sprayers to force paint out at high speed, in jackhammers to break up pavements and in train and bus brakes.

Pneumatic systems are low maintenance, compact and safe as only air can leak from the system.

Share the States of matter presentation to recap on the characteristics of gases. Show the children the Pneumatics video. Ask the children questions about the information and ensure they can describe the forces in action and why pneumatics are used in heavy lifting equipment and machinery. Provide each child with a Pneumatic systems recording sheet and the listed practical resources. Invite the groups to carry out the experiments listed on the recording sheet and encourage them to share their findings at the end of the session.

How are pneumatics used?

Testing a product against the design criteria will highlight anything that needs improvement or redesign.

Changes are often made to a design during manufacture.

Ask the children to recall what they learned about pneumatics in the previous lesson and how they are used in machines to create movement. Provide them with the Pneumatics challenge planning sheet. Introduce the challenge and provide the children with the practical resources. Give groups of children 45 minutes to complete the task. At the end of the session, ask the children to show their work to others and evaluate their task using the Pneumatics challenge evaluation sheet. Encourage them to list any difficulties they had or changes they made to their product and encourage them to describe what they have learned from the task.

How do you make a pneumatic mechanism?

Different mechanisms and systems can work together to perform a function.

A strong and stable structure is necessary to support different mechanisms in a machine.

Watch the Young Engineers: Pneumatic machine video and discuss how the strong structure, pneumatic system and lever work together to make a machine that can lift a load. Invite pairs or groups of children to make a version of the machine in the video, using the techniques and equipment shown. Encourage the children to problem-solve until their machine works smoothly, then ask them to draw a labelled diagram of their machine on the Pneumatic machine recording sheet.

How could we use pneumatics?

Safety features are often incorporated into products that might cause harm.

Pneumatic systems can be used to lift heavy loads, raise and lower platforms or soften a force by acting as a shock absorber.

Ask the children to design a prototype for an object, furniture or gadget that uses pneumatics to make life easier or more comfortable around the home. Before they start, display the Design criteria information sheet and show the children the practical resources. Encourage the children to gather their ideas using discussion, annotated and exploded diagrams and simple modelling, then ask them to choose one idea to make into a prototype. Ask the children to fill in the Pneumatic product prototype planning sheet. Encourage them to incorporate the building techniques learned in this and earlier projects.

How can we use iteration to improve our prototype?

Testing a product against the design criteria will highlight anything that needs improvement or redesign.

Changes are often made to a design during manufacture. Materials should be cut and combined with precision.

Design is an iterative process, meaning that once an initial prototype has been designed it is continually tested and improved until the final product is deployed.

Ask the children to gather the resources they need to build their prototype. Before they start, share and discuss the Iterative design process poster. Encourage the children to follow the process as they work, implement their initial plan, regularly test their prototype, evaluate its success, and then adjust their design until they have a working prototype that they can deploy. At the end of the session, ask the children to provide feedback about the task and the iterative process.

How effective were our prototypes?

A focus group is a small group of people whose reactions and opinions about a product are taken and studied.

Evaluations can be made by asking product users a selection of questions to obtain data on how the product has met its design criteria.

Ask the children to present their prototype to two small focus groups, one made up of children from school and one made up of adults. Encourage them to use the Pneumatic product prototype evaluation sheet questions to lead a discussion about their prototype with each group. Encourage the focus groups to use the prototype, ask questions, comment on the design, explain what they like and suggest any improvements. Use a device to record an audio of the focus group discussions to refer to later, if needed. After receiving feedback, encourage each design team to discuss the similarities and differences in the feedback from the focus groups and identify any key points raised. Encourage the children to fill in the evaluation sheet at the end of the session to record their findings.

PSHCE (TERM 1)

NC (RSE)

L2. to recognise there are human rights, that are there to protect everyone
L3. about the relationship between rights and responsibilities
L4. the importance of having compassion towards others; shared responsibilities we all have for caring for other people and living things; how to show care and concern for others
L5. ways of carrying out shared responsibilities for protecting the environment in school and at home; how everyday choices can affect the environment (e.g. reducing, reusing, recycling; food choices)
L19. that people's spending decisions can affect others and the environment (e.g. Fair trade, buying single-use plastics, or giving to charity)

Learning Behaviours: Self Manager	*How can the choices I make affct people on the other side of the world? (Twinkl UKS2 Our World unit)*						
I recognise risks that may be involved when tackling my work. I can organise things well, including resources and others, when working independently. I appreciate how learning can happen from mistakes. I can use success criteria to check on how successful a task has been. I am happy to persevere even when the solution is not easily at hand I am able to assess risk and make sensible decisions. I cope well with additional pressure. I am confident and capable when allowed to organise my own time and space. I can call on a range of strategies to help me overcome a problem. I appreciate that feelings change over time and I can cope with it. I can empathise with others, appreciating that different people react in different ways to certain situations.	**What is a Global Citizen?** I can talk about and understand how we can be responsible global citizens	**What is Global Warming ?** I can describe what global warming is and what we can do to help prevent it from getting worse.	**How does our use of energy affect others?** I can explain how our energy use can harm the environment and describe what we can do to help	**Why is it important to use water carefully?** I can describe how we can use water responsibly and understand the importance of doing this.	**Why should we encourage biodiversity?** I can understand what biodiversity is and explain the importance of doing all we can to encourage it.	**How can the choices I make help people across the world?** I can make choices which make the world a better place and that help people across the world.	NO OUTSIDERS LESSON *How To Heal a Broken Wing (Helping others)*

PSHCE- (TERM 2)

NC (RSE)

R1. to recognise that there are different types of relationships (e.g. friendships, family relationships, romantic relationships, online relationships)
R5. that people who love and care for each other can be in a committed relationship (e.g. marriage), living together, but may also live apart
R6. that a feature of positive family life is caring relationships; about the different ways in which people care for one another
R7. to recognise and respect that there are different types of family structure (including single parents, same-sex parents, step-parents, blended families, foster parents); that families of all types can give family members love, security and stability
R8. to recognise other shared characteristics of healthy family life, including commitment, care, spending time together; being there for each other in times of difficulty
R9. how to recognise if family relationships are making them feel unhappy or unsafe, and how to seek help or advice.
R11. what constitutes a positive healthy friendship (e.g. mutual respect, trust, truthfulness, loyalty, kindness, generosity, sharing interests and experiences, support with problems and difficulties); that the same principles apply to online friendships as to face-to-face relationships
R15. strategies for recognising and managing peer influence and a desire for peer approval in friendships; to recognise the effect of online actions on others
R17. that friendships have ups and downs; strategies to resolve disputes and reconcile differences positively and safely
R18. to recognise if a friendship (online or offline) is making them feel unsafe or uncomfortable; how to manage this and ask for support if necessary
R22. about privacy and personal boundaries; what is appropriate in friendships and wider relationships (including online);
R26. about seeking and giving permission (consent) in different situations
R27. about keeping something confidential or secret, when this should (e.g. a birthday surprise that others will find out about) or should not be agreed to, and when it is right to break a confidence or share a secret
R28. how to recognise pressure from others to do something unsafe or that makes them feel uncomfortable and strategies for managing this
R29. where to get advice and report concerns if worried about their own or someone else's personal safety (including online)
R30. that personal behaviour can affect other people; to recognise and model respectful behaviour online
R33. to listen and respond respectfully to a wide range of people, including those whose traditions, beliefs and lifestyle are different to their own

Learning Behaviours: Effective participator	*What do positive relationships look like? (Twinkl UKS2 VIPs unit)*						
When making suggestions, I can break down practical ideas into manageable steps. I am prepared to discuss and debate issues until a sensible compromise is reached. I am able to act as an ambassador for class/school etc. I can act as a 'buddy' or mediator. I can act as an advocate for views and beliefs that may differ from my own. I show maturity when acting as a mediator. I can be a good role model for good learning behaviour. I am able to control my own mood swings. I know what the risks are when considering my work. I can cope with criticism and learn from it.	**What do positive relationships look like?** I can explain how VIPs who love and care for each other should treat each other.	**How many ways are there to calm down?** I can identify different ways to calm down when I am feeling angry or upset.	**Does it matter if my friends disagree with me?** I understand that people have different opinions that should be respected.	**What is peer pressure and what can I do about it?** I can identify negative influences on my behaviour and suggest ways that I can resist these influences.	**Is it ok to tell someone's secret?** I can explain when it is right to keep a secret, when it is not and who to talk to about this.	**What do positive relationships look like?** I can recognise healthy and unhealthy relationships.	**NO OUTSIDERS The Girls (Friendship)**

RE(TERM 1)

Learning Objective: to explore different ways of showing belief with special reference to Islam

Key Concepts: Sacred Text; Wudu; Hadith; Hafiz; Calligraphy

Do Muslims need the Qur'an? (ODBE Y5 U1)

What is a sacred text?

Do an activity like the "last piece of paper in the world" activity from the RE Today Publication: Reflections. (Give pupils a blank piece of paper and ask them to imagine that it is the last piece of paper in the world and they need to think of the best way to use it – what would they write. Precede this with a stilling activity.) What do the children think is the most important idea to communicate? Play Chinese whispers – what are the advantages of writing things down?

What would the children expect to be written in a Sacred Text? Is a Sacred Text useful? In what ways? Discuss and establish what is meant by "sacred" and find examples of what is sacred.

What is the Qur'an?

Find out what is contained in the Qur'an and how it is used. Explore the way the Qur'an is kept, read, memorised and how people prepare to read it.

What is the difference between the Qur'an and the Hadith?

Read and explore some of the stories; compare the Qur'an to the Hadith and discuss which might have more impact on the lives of Muslims.

https://www.twinkl.co.uk/resource/the-quran-and-hadith-information-poster-t-re-1649338503

What seems to make the biggest difference to the way Muslims live? Do they learn more from the Qur'an or the Hadith?

What is the main teaching of the Qur'an?

Look at the impact the Qur'an has on the lives of Muslims and their daily routine, schooling etc. Compare this to other influences on Muslims – that of community, family etc. Think about the consequences of Muslims believing that the Qur'an contains the actual words of Allah and that therefore it has to be learned in Arabic rather than any other language.

How does the Qur'an compare to other sacred texts?

Compare what they have learned about the Qur'an with the Bible and the Torah. What do the differences show us about the way the sacred texts are used? Does it matter that they have to learn it in Arabic? What is the main message that Muslims take from the Qur'an? How does this impact on Muslims?

Do you need a Sacred Text?

How would you use a Sacred Text? Is it valuable to read a Sacred Text? Would you read one? Why? How would it change you? Re-do the "last piece of paper in the world" reflection. Have you changed your mind? If so, what other changes do you need to decide to make? If you don't use a text where do you get your ideas about what is right and wrong from?

RE- (TERM 2)

Learning Objective: to explore the concept of incarnation in the Christmas story; to compare the Biblical narrative with a traditional Christmas story

Key Concepts: Christ; Incarnation; Emmanuel

Is "God made man" a good way to understand the Christmas story? (ODBE Y6U2)

What do Christmas Card illustrations tell us about the message of Christmas?

Children should make a list of all the characters, features, facts and events of the Christmas story. Give out lots of Christmas cards and ask pupils to sort them into pictures that tell the Christmas story and those that don't. Do the ones that tell the story have anything in common? If they didn't know the Christmas story what would the Christmas cards tell them? Who appears to be the most important character?

Are all the nativity stories in the Bible the same?

Read the Christmas story in the four gospels (actually the story is only really in Matthew and Luke; Mark and John both express it very differently). Are any of the Christmas cards really telling the story as found in the Bible? What are the Bible stories actually telling us?

What is the message about Jesus at the opening of St John's Gospel?

Focus particularly on the opening of the Gospel of John and what that tells about Christian beliefs. Find out what Christians are actually celebrating at Christmas – try to link the celebrations with beliefs. Are there any links? Listen to some carols – what story is told there? Find out the meaning of the name "Emmanuel" or "Immanuel".

Are there other ways to understand the Christmas Story?

Are there other ways of understanding the story? Use the Arziti painting "Incarnation" and explore what that picture is telling us. Find other nativity/incarnation pictures to explore and compare. Find out what Christians understand by the word "Incarnation."

What are the key messages of the Christmas story for Christians?

What do Christians really believe about the Christmas story? Does it make a difference to the way that Christians live? Does it make a difference that Christians believe Jesus is God incarnate? What does incarnation mean? Does it change the way Christians celebrate Christmas? Is Christian belief in Jesus similar to Hindu belief in avatars? Does Christmas make sense if Jesus is not God Incarnate? Does it make sense for people who do not believe to celebrate Christmas?

Can you design a Christmas card that shows the meaning of Christmas?

eHow would they draw/paint the meaning of Christmas? What does "God made man" or "incarnation" mean to the children? What do they believe about Christmas? How do they think Christmas should be celebrated? Discuss whether the children think Christmas is too commercialised. Is God made man just for Christmas? Address the main question and debate the answer, allowing the children time to reflect on whether what they have learned or thought about changed how they feel about Christmas?