



Innovation

Year 5 | Summer 1

CURRICULUM SPOTLIGHT: COMPUTING | DESIGN AND TECHNOLOGY

ENQUIRY

How can technology be used to help others?

OUTCOMES

STEM Design Exhibition

VOCABULARY

D&T: Design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional, frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent, prototype

Computing: buzzer, circuit, code, codebit, coding, function, functions, invention, invention cycle, input, loops, output, programme, rechargeable battery, routine, sequences, slide dimmer, usb cable, usb power bit.

ENGLISH TEXTS

- Mysteries of Harris Burdick by Chris Van Allsburg
- Beauty and the Bin by Joanne O'Connell

BACKGROUND KNOWLEDGE

- Howell (2020) Working with Building and Structures
- Moreno (2021) Architecture for Kids: Skill-Building Activities for Future Architects
- 15 Incredible technologies that will change the world - https://www.youtube.com/watch?v=xPl8H2jZ_U

RESOURCES

Little Bits Coding

CORE CURRICULUM LEARNING OUTCOMES

English	Mathematics	Physical Education	Design and Technology
<p>Spelling: Phonemes: ch, sh, ay, ee, er</p> <ul style="list-style-type: none"> Use the perfect form of verbs to mark relationships of time and cause 	<ul style="list-style-type: none"> Finding equivalent fractions and simplifying fractions Common denomination: adding and subtracting 	<p>Health and Fitness</p> <ul style="list-style-type: none"> Static balance- stance Coordination- footwork Tennis Rounders 	<p>Substantive Knowledge</p> <ul style="list-style-type: none"> Understand how key events and individuals in DT have helped shape the world. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding). <p>Disciplinary Focus</p> <ul style="list-style-type: none"> Designing, Making, Evaluating and Improving
PSHCE	Spanish	Computing	
<ul style="list-style-type: none"> Personal Safety 	<ul style="list-style-type: none"> Romans 	<p>Digital Literacy</p> <ul style="list-style-type: none"> The use of computer networks and the internet beyond the classroom (look at the role of computers in aiding space exploration – linking with NASA). <p>Information Technology</p> <ul style="list-style-type: none"> Present data and information in a variety of ways for a given purpose (children collate information about a NASA project). Creating an online presentation. <p>Computer Science</p> <ul style="list-style-type: none"> Use input and outputs to complete a basic function. Create and debug algorithms. Use a range of functions to add complexity to code. Explaining the impact that this will have. 	
PRE		Science	
<p><i>Substantive Knowledge:</i> The Ten Commandments are useful guidance for Christians.</p> <ul style="list-style-type: none"> Christians believe that the Holy Spirit lives in Christians and that the ‘Fruits of the Spirit’ are the evidence of the Holy Spirit in Christians Going to church is one way some Christians show commitment to God Prayer is an important way Christians connect with God Holy Communion is a way Christians remember Jesus’ death Baptism is an outward expression of an inward commitment to God Christians seek to love others <p><i>Philosophy and Ethics:</i> Is it ever OK to lie?</p> <p><i>Evaluation:</i> Children evaluate the various ways Christians show commitment to God</p> <p><i>Personal reflection:</i> Children consider commitment in their own lives</p>		<p>Earth</p> <ul style="list-style-type: none"> Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. Describe the movement of the Moon relative to the Earth. Describe the Sun, Earth and Moon as approximately spherical bodies. Use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky. 	

Key transdisciplinary concepts that will be considered in this project:



Sustainability

Science | Geography | PSHCE | PRE

Circular Economy: A concept that emphasizes the reuse, repair, and recycling of products and materials to minimize waste and promote sustainable consumption and production practices.

Biomimicry: The practice of emulating nature's designs and processes to create sustainable solutions to human challenges, such as energy-efficient buildings and biodegradable products.

Cradle-to-Cradle Design: A design approach that considers the entire life cycle of a product, from production to disposal, to ensure that it can be fully recycled or reused in a closed-loop system.

Design Thinking: A human-centered approach to innovation that involves understanding the needs and perspectives of users to create products and services that are sustainable, user-friendly, and effective.

Systems Thinking: An approach to problem-solving that considers the complex relationships and interdependencies between different elements of a system to identify sustainable solutions.



Diversity & Relationships

History | Geography | PSHCE | PRE

Design Thinking: An approach to problem-solving that focuses on empathizing with the needs of diverse stakeholders and developing creative solutions that prioritize inclusivity and user-centered design. Design thinking encourages collaboration and co-creation across disciplines to create solutions that work for everyone.

Intersectionality: The understanding that individuals have multiple, intersecting identities and experiences that shape their perspective and influence how they experience the world.

Recognizing and addressing intersectionality is essential for creating inclusive innovation that considers the unique needs of diverse individuals and communities.



Power & Systems

History | Geography | PSHCE | PRE

Systems Thinking: An approach to problem-solving that considers the complex relationships and interdependencies between different elements of a system to identify innovative solutions to issues related to power dynamics and systems.

Participatory Design: A design approach that involves users and stakeholders in the innovation process to ensure that their needs and perspectives are reflected in the final product or solution.

Human-Centered Design: An approach to innovation that focuses on the needs and perspectives of end-users to create products and services that are more equitable and inclusive.

Co-creation: A process of collaborative innovation that involves multiple stakeholders, including end-users, in the design and development of new products, services, or systems.



Health & Spirit

Mind-Body Connection: The understanding that physical health is influenced by mental and emotional states, and vice versa. This concept emphasizes the importance of holistic approaches to healthcare and innovation that consider both physical and psychological well-being.

Spirituality and Sustainability: Examining the connection between personal spirituality and one's relationship with the environment, to promote a deeper understanding of the role of consumption in shaping the world.



Technology

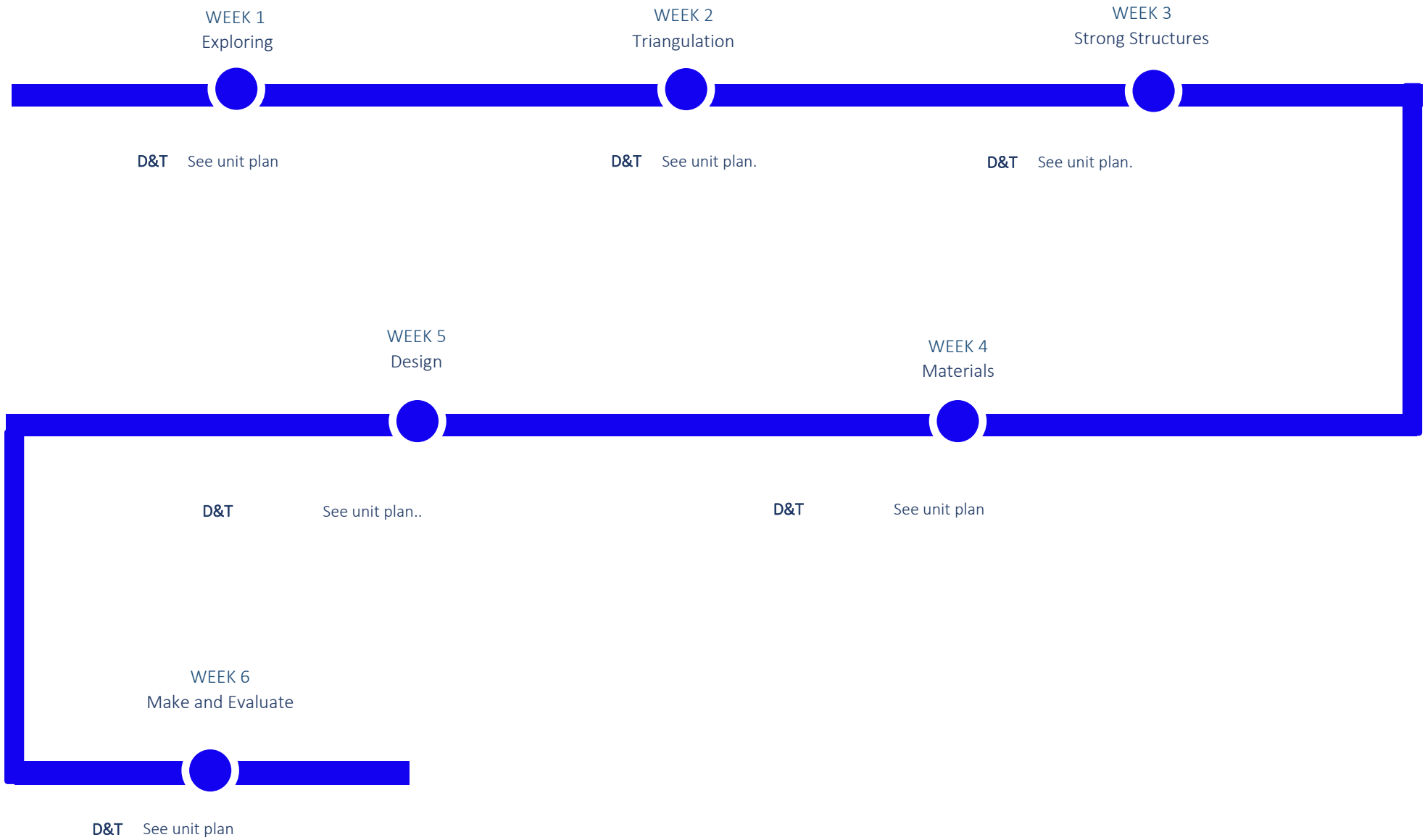
Science | Geography | History

Artificial Intelligence (AI): The development of computer systems that can perform tasks that would typically require human intelligence, such as language recognition, decision-making, and problem-solving. AI is driving innovation across many industries and has the potential to transform how we live and work.

Internet of Things (IoT): The connection of physical devices to the internet, allowing them to collect and share data. IoT has the potential to revolutionize how we interact with the world around us, from smart homes to autonomous vehicles.

Design and Technology		Computing
Thinking		
Substantive <i>Factual information of the subject to be learned</i>	Understand how key events and individuals in DT have helped shape the world. Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding). Structures <ul style="list-style-type: none"> ▪ Use tools to accurately measure, mark out, cut, shape and join materials to make frameworks. ▪ Apply understanding of how to strengthen, stiffen and reinforce more complex structures ▪ Know how to use materials in a functional way. 	<ul style="list-style-type: none"> ▪ Understand that electronics and code are linked and can draw upon these connections to create devices with a specific function. ▪ Little Bits coding language – input/output/debug
Disciplinary <i>The action taken within a subject to gain knowledge.</i>	Designing <ul style="list-style-type: none"> ▪ Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose ▪ Generate, develop, model and communicate their ideas through discussion, annotated sketches and prototypes Making <ul style="list-style-type: none"> ▪ Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining) accurately ▪ Select from and use a wider range of materials and components, including construction materials, ingredients, according to their functional properties and aesthetic qualities ▪ Cut materials accurately and safely by selecting appropriate tools. ▪ Select appropriate joining techniques Evaluating and improving <ul style="list-style-type: none"> ▪ Investigate and analyse a range of existing products ▪ Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work ▪ 	<ul style="list-style-type: none"> ▪ Use input and outputs to complete a basic function. ▪ Create and debug algorithms. ▪ Use a range of functions to add complexity to code. Explaining the impact that this will have.
Enacting		
Project link	▪	
Community proposal		
Personal action	▪	
Being		

PROJECT SEQUENCE



WEEK OVERVIEW

Year 5							
Summer 1 - Innovation							
		Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Arts	Design and Technology	See Unit Plan above					
	Key texts	Mysteries of Harris Burdick by Chris Van Allsburg			Beauty and the Bin by Joanne O'Connell		
Languages	Writing	Narrative			Report		
	Spelling	ch,	sh	ay	ee	er	Consolidate
	Grammar	Use the perfect form of verbs to mark relationships of time and cause					
	Spanish	Romans					
	Maths	Fractions, Decimals and Percentages: Multiplying fractions	Fractions, Decimals and Percentages: Decimals, percentages and fractions	Fractions, Decimals and Percentages: Thousandths	Geometry: Angles – protractors	Geometry: Calculating angles	Geometry: Drawing lines and angles
STEM	Science	Earth: 5.4a Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. 5.4b Describe the movement of the Moon relative to the Earth. 5.4c Describe the Sun, Earth and Moon as approximately spherical bodies. 5.4d Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.					
	Philosophy, Religion and Ethics	Christianity – Commitment	Christianity – Commitment	Christianity – Commitment	Christianity – Commitment	Christianity – Commitment	Christianity – Commitment
Health and Wellness	PE	Unit 5 Physical Tennis	Unit 5 Physical Tennis	Unit 5 Physical Tennis	Unit 5 Physical Tennis	Unit 5 Physical Tennis	Unit 5 Physical Tennis
	PSHE						

PLANNING CHECKLIST

The phase leaders are responsible for ensuring the following items are prepared by the Monday of the last week of each half-term and shared with teachers and learning coaches. Phase leaders may delegate tasks to members of their team. Curriculum leaders are responsible to ensure that the subject coverage on year group plans and planning matches with policy.

- Project overview document
- History, Geography, RE Unit plans
- Science Unit plans
- PSHE Unit plans
- Project anchor fiction/non-fiction books ordered
- Project resources ordered
- Project and RE field trip organised (& risk assessments)
- External visitors/speakers booked in
- Project title pages for humanities and science books
- Knowledge map
- Vocabulary cards
- Unit assessments in Geography, History, Science and RE

OTHER

- Computing, DT, PE, Spanish Unit plans
- Forest School / Allotment Project organised
- Enrichment weeks organised
- Pre-unit assessments in Maths
- Assemblies organised