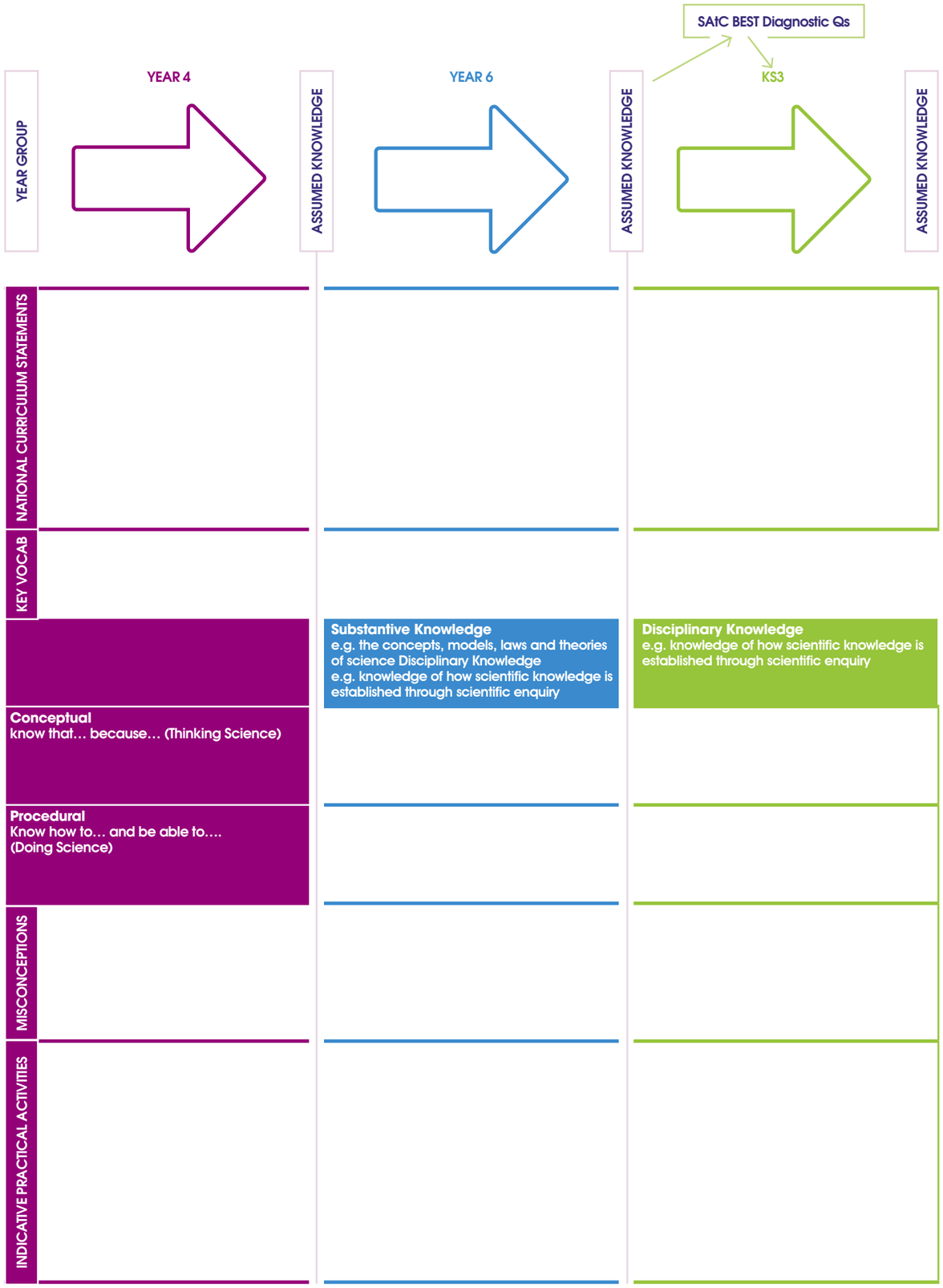

CURRICULUM TRANSITION TRANSLATOR

Science ACROSS THE CITY

WHAT IS THE CURRICULUM TRANSITION TRANSLATOR (CTT)?

The CTT is the culmination of a 6-month collaborative innovation forum consisting of primary and secondary teachers across Stoke-on-Trent. Through a series of structured meetings and discussions, the team co-developed a framework for cross-phase curriculum dialogue and planning that supports the sequencing of progressive scientific knowledge courtesy of a shared transition vernacular.

The CTT aims to set out learning before and after the KS2 to KS3 transition to better define a continuous, spiralling, curriculum. Most secondary schools will have multiple feeder primaries, so the dialogue, directed by the CTT, could take place within a network of such schools, via a facilitated workshop or as a focused activity with specific feeder schools.

Key documents including the Science **National Curriculum** and science schemes of work will be helpful to refer to throughout the process.

How to use the CTT

Once a key scientific concept has been chosen, the statements of learning can be selected from the KS3 science national curriculum and the learning 'tracked back' through the primary curriculum, to identify how the learning of this concept is built and developed. It is suggested that the last two 'touch points' in the primary curriculum are identified, although knowledge may be built over several year groups. The last points of learning may not necessarily be in upper Key Stage 2 and recognising this can help highlight areas within the KS3 curriculum where student knowledge recall may be challenging due to the extended timeframe between learning stages.

Listing the key vocabulary that students use at each stage identifies where new learning or more in-depth learning is required. This allows teachers to see when these vocabulary changes occur and thus identify where/when students are more likely to 'not understand'. This affords KS3 colleagues the option to adapt and, initially, utilise KS2 language to ensure continuity for their students and a reduction in their cognitive load.

Common misconceptions that the students may have can be identified through existing documents such as the **ASE Plan Knowledge Matrices** and then woven into the CTT plan.

Mapping substantive and disciplinary knowledge, along with highlighting activities which are typically carried out at each stage, should help to reduce repetition of learning. This is achieved by ensuring a focus is placed on the components of that learning and exploring which activities and investigations can help develop or illicit those specific components.

The CCT documents that have been provided are example output from this collaborative working and can be used as reference for your own discussions.

'The CTT aims to support collaborative dialogue as Ofsted recognised that 'too many secondary schools did not work effectively with partner primary schools to understand pupils' prior learning and ensure that they built on this during Key Stage 3'.

Key Stage 3: The wasted years?, Ofsted, September 2015; No. 150106

CURRICULUM TRANSITION TRANSLATOR: **ELECTRICITY**

SAtC BEST Diagnostic Qs

YEAR GROUP	YEAR 4	ASSUMED KNOWLEDGE	YEAR 6	ASSUMED KNOWLEDGE	KS3	ASSUMED KNOWLEDGE
NATIONAL CURRICULUM STATEMENTS	**Pupils should be taught to:** •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 conductor		**Pupils should be taught to:** • 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		**Pupils should be taught:** Current electricity •electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge •potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current •differences in resistance between conducting and insulating components (quantitative) Static electricity •separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects •the idea of electric field, forces acting across the space between objects not in contact	
KEY VOCAB	Series circuit, cells, wires, bulbs, switches, buzzers, lamp, loop, battery, conductors, insulators.		Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, component, voltage		Current, resistance, component, voltage, series, parallel	
			Substantive Knowledge e.g. the concepts, models, laws and theories of science Disciplinary Knowledge e.g. knowledge of how scientific knowledge is established through scientific enquiry		**Disciplinary Knowledge** e.g. knowledge of how scientific knowledge is established through scientific enquiry	
Conceptual know that… because… (Thinking Science)			Common appliances require electricity to operate (Y4) I know that a switch can be used to open and close a circuit		I know that some metals may be able to replace a switch in a circuit due to their conductive properties.	
Procedural Know how to… and be able to…. (Doing Science)			Draw a simple circuit diagram using circuit symbols (Y4) To be able to draw a diagram of a circuit that uses a switch.		To build a circuit that uses a conductive metal as a switch.	
MISCONCEPTIONS					• Energy in a circuit is used up because the battery runs out. • Voltage and current are the same thing. • Voltage and current get used up by the circuit. • The arrangement of a circuit has no effect on the components. • The voltage is the same in all circuits.	
INDICATIVE PRACTICAL ACTIVITIES	List of indicative practical activities with explicit identification of the composite and components to ensure emphasis/ coherent sequencing		**Construct a simple series circuit:** • Understanding the term/name of each component. • Awareness of the effect/purpose of a particular component • Understanding of the effects of using too many/little components. • Ability to use components for a specific purpose.		• Investigate whether a range of materials are conductors or insulators, and explain why. • Using a range of electrical appliances, identify the voltage ratings of different appliances, and determine which use mains electricity and which use batteries. Observe how to measure the voltage of a circuit • investigate the relationship between voltage and current when the resistance of the circuit is fixed. • devise own series and parallel circuits using three bulbs. Build them side by side and observe the differences between them • set up parallel and series circuits with different numbers of bulbs, to investigate how current and voltage differ	

CURRICULUM TRANSITION TRANSLATOR: **PLANTS**

YEAR GROUP	YEAR 1	ASSUMED KNOWLEDGE	YEAR 2	ASSUMED KNOWLEDGE	KS2	ASSUMED KNOWLEDGE
NATIONAL CURRICULUM STATEMENTS	Understanding the World **ELG: The Natural World Children at the expected level of development will: -** Explore the natural world around them, making observations and drawing pictures of animals and plants; Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. **Pupils should be taught to:** • identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • identify and describe the basic structure of a variety of common flowering plants, including trees		**Pupils should be taught to:** • explore and compare the differences between things that are living, dead, and things that have never been alive • identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • identify and name a variety of plants and animals in their habitats, including microhabitats • describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food • observe and describe how seeds and bulbs grow into mature plants • find out and describe how plants need water, light and a suitable temperature to grow and stay healthy		**Pupils should be taught:** Current electricity •electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge •potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current •differences in resistance between conducting and insulating components (quantitative) Static electricity •separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects •the idea of electric field, forces acting across the space between objects not in contact	
KEY VOCAB	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, stem, bark, bud Names of trees Names of garden and wild flowers		As Year 1 plus: light, shade, sun, warm, cool, grow, healthy habitat, microhabitat, woodland, logs, bushes		photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal) classification, classification keys, environment, habitat, human impact	
			Substantive Knowledge e.g. the concepts, models, laws and theories of science Disciplinary Knowledge e.g. knowledge of how scientific knowledge is established through scientific enquiry		**Disciplinary Knowledge** e.g. knowledge of how scientific knowledge is established through scientific enquiry	
Conceptual know that… because… (Thinking Science)			Common appliances require electricity to operate (Y4) I know that a switch can be used to open and close a circuit		I know that some metals may be able to replace a switch in a circuit due to their conductive properties.	
Procedural Know how to… and be able to…. (Doing Science)			Draw a simple circuit diagram using circuit symbols (Y4) To be able to draw a diagram of a circuit that uses a switch.		To build a circuit that uses a conductive metal as a switch.	
MISCONCEPTIONS						
INDICATIVE PRACTICAL ACTIVITIES						