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Foreword

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Main messages from the PCAG framework

Global citizenship

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2. Rationale for the PCAG Primary Science Curriculum Framework

The PCAG

4. Development of[redacted]

This PCAG Curriculum Framework for primary science was constructed through an iterative process, by a small group of primary practitioners and academics, in regular consultation with a range of sector experts from the following fields:

- primary and secondary science education
- the Learned Societies for science and history
- developmental psychology
- curriculum diversification
- curriculum design
- creativity in primary science
- early years

Importantly, science curriculum content from a wide range of jurisdictions was evaluated against these criteria. Notably, an open-minded approach to the activity was important to allow for the inclusion of content which does not fit into the historically agreed way of organising science curricula. Using the criteria as an organising principle resulted in some content that might be considered conventional not being included. Strenuous efforts were made to resist repeating 'historical' science curriculum content and organisation, although it is acknowledged that the work has been constrained by an epistemological rigidity inherited by the writers' own schooling and teaching experiences.

It is vital that as children develop as global citizens they understand how scientific knowledge has been created and used in the past, how it is created and used now, and the types of questions that the discipline can and cannot answer. The emphasis d u[illegible] discipl[illegible] dism[illegible]

7. The PCAG Knowledge Maps

The learning descriptors within this Knowledge Map were compiled using ideas from the Understanding Science resources from the University of Berkeley, the Scientific Habits of Mind (Çalik and Coll, 2012), and the OECD (2017) definition of scientific literacy.

Science is universal, has been and is carried out in all cultures at all ages, creating a diverse scientific global community.	scientists apply what they know to inform decisions and solve problems related to local and global challenges.	apply their scientific knowledge and findings to different contexts and problems, including personal, local and global.
	science began before the European Renaissance, and has taken place across history and the globe.	value and respond to the contributions of others within and beyond their own community.
		learn about scientific endeavours throughout history with examples from different cultures and historical periods.
Science is a creative human endeavour which builds new knowledge to explain natural phenomena.	scientists make inferences, are curious and imagine possibilities.	be curious, demonstrating a passion for discovery,imagining possibilities.
	scientists observe to ask and answer scientific questions to build explanations about the natural world.	ask, plan and answer their own scientific questions to explore possibilities and help explain the natural world.
	scientists work through an iterative enquiry process, in which answering one question often leads to other questions.	identify new questions that have arisen from an enquiry.
Science is an empirically based process (based on or derived from observation of the natural world).	scientists make observations and collect, analyse and interpret data to test their ideas.	gather data by making and recording observations and measurements.
	scientists identify links, patterns and relationships.	analyse data to identify links, patterns and relationships.
		understand how to differentiate between questions that science can or cannot answer.
Scientific knowledge is tentative and subject to change based on new evidence or new interpretations of existing evidence.	scientists present and explain their ideas and evidence, are receptive to new ideas and may not always agree with each other.	present and explain their findings to a range of audiences, inviting peer-review on their conclusions.
	scientists are sceptical, develop their ideas by using what they already know and new evidence.	review and question their own ideas and understanding, as well as those of others, to appreciate that over time, areas of science can change and develop in response to new evidence.
Science is a rigorous discipline where it is important to know how the evidence was collected and whether it can be trusted.	scientists adhere to the accepted methodologies of enquiry and answer different types of scientific questions.	use different enquiry methods to answer scientific questions.
		design and evaluate enquiries in order to maximise the trustworthiness of their data.

What to include

- Terminology relating to forces experienced in action: gravity, resistance, friction, buoyancy.

What not to include

- The difference between mass and weight.
- Explanations of balanced and unbalanced forces, e.g. how aeroplanes stay in the air.
- Explanations about the speed at which objects fall.
- Arrow diagrams to repa[illegible]