

Sciences Curriculum Improvement Cycle (CIC)

Core Group Workshop 2

28.08.2025 to 29.08.2025



Summary report

Introduction

This summary report captures the output from the second in a series of in-person workshops for the Sciences Curriculum Improvement Cycle (CIC) Core Group. The two-day workshop was held on 28 and 29 August 2025 in Glasgow. The detailed output and analysis from this workshop can be accessed via the [event Padlet](#).

This Core Group event included 26 participants each day (a total of 27 distinct individuals), representing 13 local authorities and key national partner organisations. The Core Group is a smaller, representative body of the Sciences CIC Collaboration Group, with approximately 72% of participants being practitioners.

This event built upon the second Sciences CIC Collaboration Day, held on 12 June 2025.

The objectives of the two-day Core Group Workshop were to:

- Give shape to the core concepts underpinning the science curriculum
- Draft narrative for the emerging big ideas for the sciences.

The process of developing the big ideas is inherently iterative. The draft versions of the big ideas and concept headers produced during the two-day workshop represent an important milestone, providing a foundation for ongoing refinement. These drafts will be revisited, revised, and developed further in the weeks and months ahead, in consultation with wider groups and networks.

The focus of the Core Group is to further distil the outputs from the Collaboration Group in the review of the 3–18 sciences curriculum. The [summary report from the 12 June event](#), together with the data gathered on knowledge, concept headers, and emerging big ideas, provided the stimulus and foundation for the two-day workshop activities.

Summary of activities and outputs

The two-day workshop was built around several sessions as outlined below.

Day 1: Thursday 28 August 2025			
Session	Focus	Table groupings	Key outputs
1	<p><i>Mindset and culture</i></p> <p>Develop personal awareness of biases and mindsets to support constructive discussion and decision-making. The session used the concepts of scout and soldier mindsets and encouraged participants to explore how they influence thinking.</p>	<p>Mixed sector</p> <p>4 x groupings</p>	<p>Individual reflections on personal mindset and potential biases.</p>
2	<p><i>Concept overview</i></p> <p>Share the emerging concept headers and big ideas developed by the Collaboration Group. The session aimed to build a shared understanding of what is meant by a concept header, highlight their importance within the technical framework, and set expectations for further refinement of the big ideas on Day 2.</p>	<p>Mixed sector as above</p>	<p>Shared understanding of what is meant by the term concept header.</p> <p>Group reflections on the current concept headers.</p>
3	<p><i>Reviewing concept headers</i></p> <p>Each group to work on four of the 12 draft concept headers, refining their language, identifying any that should be split or merged, and drafting a short narrative for each. The aim was to agree on initial wording that reflected a shared understanding of the concepts.</p>	<p>Mixed sector</p> <p>3 x groupings</p>	<p>First-draft concept headers with agreed names and short narratives. The output captured via a shared Word document and uploaded to the event Padlet for cross-group review (session 4).</p>
4	<p><i>Cross-group review of concept headers</i></p> <p>Review the draft concepts to test for clarity, relevance and alignment with a future-orientated curriculum.</p>	<p>Mixed sector as above</p>	<p>Feedback on concept headers.</p>

5	<p>Evidence base and analysis gap</p> <p>Groups to engage with a range of stimulus materials to broaden perspectives on curriculum design and inform the review of draft concept headers. Groups considered evidence and ideas from six different sources before bringing their insights back to the larger group for further refinement.</p>	<p>Mixed sector</p> <p>6 x groupings</p>	<p>The facilitator captured group responses to the discussion questions, and representatives from each group were asked to share feedback with their larger groups in Session 6.</p>
6	<p>Further refinement of concept headers</p> <p>Refine draft concepts and narratives using feedback and insights from the six stimulus materials. The aim was to resolve any issues through peer discussion and reach agreement on merging or splitting concepts where needed.</p>	<p>Mixed sector</p> <p>As per session 3</p>	<p>Group discussions, refinements, and suggested changes to concepts were captured in a shared Word document, uploaded to the event Padlet to support the big ideas activities on Day 2.</p>

Day 2: Friday 29 August 2025

Session	Focus	Table groupings	Key outputs
1	<p>Grouping of concepts</p> <p>Organise and group the draft concept headers from Day 1 under the emerging big idea themes from the Collaboration Day. Individual responses were captured using a Menti poll.</p>	<p>Whole group</p>	<p>Output from the Menti poll used to capture the concept headers organised under the big ideas.</p>
2	<p>Big ideas</p> <p>Groups to develop draft titles for the emerging big ideas. Participants were required to reflect on the previous concept groupings (output from session 1) to create a shared understanding of each big idea.</p>	<p>Mixed groups. 6 groups required. Participants were given free choice based on personal big idea interest</p>	<p>Draft big idea titles captured in a shared Word document.</p>

3	<p><i>Big ideas narrative</i></p> <p>Groups to develop clear, accessible narratives for each of the 6 emerging big ideas. Guidance was provided as to support narrative structure and ensure consistency across groups.</p>	Groupings as above	Draft big idea narratives were recorded on A3 sheets and displayed for cross-group review, with the associated concept headers included.
4	<p><i>Big ideas feedback</i></p> <p>Refine big idea headings and narratives through cross-group feedback. Participants reviewed, commented on, and discussed each other's drafts to ensure clarity, alignment with concept headers, and appropriate language. Returning to their big idea groups, further refinement was carried out based on all the feedback from the cross-group review.</p>	Individual reflections	Shared Word document updated with agreed changes, uploaded to the event Padlet for reference.
5	<p><i>Big ideas – refine</i></p> <p>Conduct a final review and share the refined big ideas.</p>	Groupings as session 2 & 3	Visual record of the final big ideas displayed for reference, noting the associated concepts and narratives (noted at the time that these will continue to be developed)

Day 1: Concepts

The Core Group spent time considering the concepts that would underpin the sciences curriculum. Having spent some time during the Collaboration event in June on a similar task, it was clear that there were different interpretations of the term concepts. The group therefore began by considering how many concepts we should have, and how detailed these should be.

Participants were presented with [12 potential concept headers](#) which emerged from the Collaboration event in June. At this event, a total of 88 distinct concept headers were suggested by the Collaboration Group. The Education Scotland science team refined this output by looking for similar themes and wordings within these and removed any concepts which were too similar to the emerging big ideas, to reach a total of 12 for consideration by the Core Group. These provided a starting point for discussions.

Each group looked at four concept headers and decided whether any should be merged or split. They then drafted a short narrative for each concept to ensure shared understanding. Groups then had the opportunity to review the work of other groups and give feedback.

Groups were then provided with stimulus materials to aid gap analysis. Within each of the groups, a participant was tasked with looking at one of the following stimulus materials and accompanying discussion questions, then share their reflections and implications for their concept headers with the group.

- [Senior phase focus group output](#)
- [Current sciences curriculum concept headers](#)
- [Emerging big ideas from the cross-cutting expectations](#)
- [International comparisons from New Zealand and Singapore](#)
- [PISA science framework](#)
- [Learned Societies concept mapping](#)

At the end of day one, the following concepts and narratives emerged.

1. Life science

Life science is the study of how things survive and develop. It includes understanding how humans, plants, animals and microorganisms live, grow and reproduce.

2. Interdependence

Interdependence is the study of how living things interact with each other and their environments. It includes understanding how all living things depend on each other and their environment for survival.

3. Health

Learning about our mental and physical wellbeing, and how we need to keep our bodies healthy. Health includes mental and physical wellbeing. Our health can be affected by lifestyle, inheritance and infectious microorganisms.

4. Our changing planet

Earth is unique and supports diversity of life. The Earth is a dynamic interconnected system. Our actions have consequences on the planet.

5. Action for climate/ Preserving our planet/ Our future planet

Human actions affect local and global ecosystems in both positive and negative ways. The study of human impact on the environment. Considering the needs of future generations and how they can maintain and improve the environment to ensure its survival.

6. Energy and change

Energy is the ability to bring about change. Energy can't be created or destroyed but can be converted from one form to another.

7. Matter and its changes

Matter is defined as anything that has mass and takes up space (everything around us such as air, water, rocks and living things). Understanding matter and how it changes helps us make sense of our world.

8. Forces

A force is a push or pull on an object that results from its interaction with another object. Forces can cause changes speed, direction and shape.

9. Being scientific

Using a variety of approaches to investigate, discover, learn, undertake and experience scientific practices. Science is evidenced based and scientists change their views on the world as the evidence changes.

10. Science identity

How science impacts on me, society and the world. This is about how children see science as relevant to them and how they see themselves as scientists.

11. Applications and contexts

Application of the science knowledge in the real world and how these impact us. The application and use of science. How science has changed society over time for good and bad.

12. Participating and contributing

Using scientific knowledge in order to make informed decisions and having the confidence to take appropriate action.

13. Critical scientific literacy/Ethical literacy

The concept of considering the sources of information as well as what the information is and so gain a better understanding the motivation that may influence society.

14. Earth systems

No narrative provided.

15. Pathways and careers

An awareness that studying sciences is an opportunity for multiple rewarding experiences and pathways for future studies and careers.

16. Waves and radiation

No narrative provided.

These 16 concepts were used as a starting point for day two to shape the big ideas. As the workshop progressed, other concept headers began to emerge including **Properties of matter, Quantum and nuclear physics, Electricity and magnetism, Building blocks, Chemical changes, Physical changes, Analytical chemistry, Weather systems, Earth in space, Earth's structure and materials, Biomes/environments, Solar system, Moon and tides.** These were not reviewed by all groups and did not have an accompanying narrative. This output will be further refined and developed by the group at their next meeting.

Day 2: Big ideas

Participants were presented with the five big ideas which emerged from the Collaboration Group event and Senior phase focus group that were held in June 2025.

1. **Our world and beyond**
2. **How things work**
3. **Living things**
4. **Science in society/Being scientific**
5. **Sustainable futures**

Participants completed a [Menti](#) poll to consider which of the emerging concepts from day one most closely aligned with these emerging big ideas from the Collaboration Group. The most voted for concepts for each big idea are summarised below.

Big idea	Underlying concepts
Our world and beyond	Earth systems Our changing planet Action for climate Interdependence Life science
How things work	Forces Energy and change Matter and its changes Applications and contexts
Living things	Life science Interdependence Health Our changing planet Earth systems
Science in society/ Being scientific	Being scientific Science identity Participating and contributing Scientific literacy Applications and contexts
Sustainable futures	Action for climate Our changing planet Participating and contributing Scientific literacy Earth systems

The group was then asked to consider whether there were any gaps within the big ideas identified. There was a consensus that the **'Matter and its changes'** concept from the previous day could be a big idea in itself, with concepts such as **Building blocks, Properties of matter, Chemical changes, Physical changes, and Analytical chemistry** sitting underneath. These additional concepts were not reviewed by all groups and did not have an accompanying narrative. This output will be further refined and developed by the group at their next meeting.

Participants were then asked to form six groups, with each looking at the big idea they were most interested in. Each group was then responsible for naming the big idea and writing a short narrative to describe it. Groups then had the opportunity to review each other's work and provide feedback before final refinement. The final output from this work is shown below.

Participants were unanimous in their view of having a short and accessible narrative text for each big idea. Members strongly felt that attempting to incorporate all associated concepts directly into the main narrative would render the text overly complex and less accessible to a broad audience. Their clear preference was for concise narratives, with the opening line crafted to be understandable even to children or individuals with limited background in science. To ensure clarity and usability, any concepts aligned with each big idea could be included separately below the narrative in a simple bulleted list.

1. Science and me

We understand the purposes, practices and applications of science. We have opportunities to develop and take ownership of our science journey. We can all develop science skills to help us make informed decisions in everyday life. We can all be truth seekers, using scientific skills to explore our future paths.

2. The tapestry of life

Life on Earth is complex, diverse and interconnected and relies on the resources of the natural world. All organisms share common features. Biological systems have evolved and continue to adapt in response to environmental pressures. Life is in a delicate balance where organisms rely on each other for survival. Understanding this balance empowers us to protect it.

3. How things work

Our world follows the laws of nature. We will learn how things interact through studying forces, electricity, waves, energy, and matter. By understanding these concepts, we can answer key questions about our world. We can also tackle important challenges in society. This knowledge will give us the skills and confidence to understand how things work.

4. Matter: properties and changes

Matter is anything that takes up space. This big idea explores how and why matter can be different, how it may change, how it can be useful and how it can be identified. Understanding how matter behaves helps us make sense of everything around us.

5. Our world and the Universe

Through exploring our local environments and beyond, we learn about the interconnectedness of Earth systems, how our planet is changing and our place in the Universe. Understanding this builds empathy and empowers us to look after our unique home.

6. Be the change

Science empowers us to take action to make the world a better place. Science continues to change the world and learning in science equips us with the tools to transform lives, both

locally and globally, now and in the future. Evidence and values-based science provides us with the knowledge, skills and motivation to connect with others and take action on issues we care about, such as climate change, biodiversity loss, pollution, food security and Learning for Sustainability.

Crack on...

The group suggested that the order the big ideas are presented in would be important. The suggestion was to have *Science and me* presented as the first big idea. This would reflect the priority to help learners understand the relevance of science to their lives and future. The other big ideas (Tapestry of life, How things work, Matter: properties and changes, Our world and the Universe) would provide rich opportunities for learners to develop knowledge, skills and understanding across the sciences. The last big idea, *Be the change*, would provide learners with the opportunity to put all their science learning into action, by doing.

The intention was for this sequencing of big ideas to be presentational—in practice, practitioners would be encouraged to teach the curriculum in a way most appropriate to their learners.

For the review process, it was identified that having the concept headers included would support the judgement of the narrative for each big idea. The table below outlines the assigned concept headers emerging for each big idea. Some of the concept headers had been identified from the Menti poll as a result of the work from day one, whilst other concept headers were added in by the individual groups as they progressed with the narrative. The latter of the concept headers are still to be reviewed by the full Core Group and is an action noted in next steps.

	Emerging big ideas					
	Science and me	The tapestry of life	How things work	Matter: Properties and changes	Our world and the Universe	Be the change
Concept headers originating from Menti	Being scientific Science identity Application and contexts Pathways and careers	Life science Interdependence Health	Forces	Energy and change	Earth's systems	Our changing planet Action for climate Participating and contributing
Concept header originally on Menti but adapted	Critical scientific literacy (or ethical literacy)		Energy (and thermal)			
Concept headers added by group			Waves and radiation Properties of matter Quantum and nuclear physics Electricity and magnetism	Building blocks Chemical changes Physical changes Properties Analytical chemistry	Weather systems Earth in space Earth's structure and materials Biomes/environments Solar system Moon and tides	

7. Evaluation overview

Of the **27** participants (practitioners and partner representatives) that attended the event across the two days, there were **22** completed evaluation forms (**81.5%** response rate).

- Of the **22** people who completed the evaluation, **21 (95.5%)** rated the event as very good or good – with **very good (59%)** and **good (36%)**.
- **21** out of the **22** respondents (**95.5%**) stated they felt their opinions and suggestions are being heard in the CIC process – with **strongly agree (68.2%)** and **agree (27.3%)**.
- **19** out of the **22** respondents (**86.4%**) stated they trust the sciences CIC process – with **strongly agree (50%)** and **agree (36.4%)**.
- **21** out of the **22** respondents (**95.5%**) stated that they believe that the Sciences Core group are making progress with a new sciences curriculum – with **strongly agree (59.1%)** and **agree (36.4%)**.

8. Next steps

This workshop has provided a great deal of insight and analysis to guide the next steps of the Sciences CIC Process. The output from this workshop will be taken to various stakeholder groups for initial reactions and feedback on the emerging big ideas for the science curriculum.

The Core Group will meet online twice before reconvening in person on the 20 and 21 November. The focus of these sessions will be to consider feedback gathered on the output, to further refine the concept headers and to begin giving shape to the more detailed knowledge statements which sit underneath each concept. This work will be further built upon when the wider Collaboration Group reconvenes in December 2025.

In June 2025, Scottish Government published a [timeline for the CIC process](#)¹ setting out key dates and milestones. This document sets a timeline for the draft evolved curriculum technical framework for the sciences curriculum to be published in June 2026.

If you have any questions about the sciences CIC process, then please contact Education Scotland's Sciences Team on email: science@educationscotland.gov.scot

¹ In the timeline, Q1 refers to January – March, Q2- April – June etc.