Sciences Curriculum Improvement Cycle (CIC)

Core Group Workshop 3

20 and 21 November 2025

Summary report

Education Scotland
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Contents

Introduction

This summary report captures the output from the third in a series of in-person workshops for the Sciences Curriculum Improvement Cycle (CIC) Core Group. The two-day workshop was held on 20 and 21 November 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, representing 11 local authorities and key national partner organisations. The Core Group is a smaller, representative body of the Sciences CIC Collaboration Group, with 69% of participants being practitioners.

This event formed part of a wider programme of activity, building on the second Sciences CIC Core Group Workshop in August 2025 and informed by insights from the Critical Friends focus groups, network webinars, and Education Scotland Associate development days held between September and November 2025.

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

- Review and refine draft titles, statements and narratives for the emerging big ideas for the sciences
- Explore and test the draft overarching concepts, evaluating their relevance, clarity and alignment with the big ideas
- Refine and agree the titles and narratives for the overarching concepts for the sciences

The big ideas and overarching concepts are being developed through iterative approaches. The agreed versions emerging from the two-day workshop represent a significant milestone, providing a strong foundation for future sessions. These will be shared with the Collaboration Group at an in-person event on 03 December 2025, and with the wider sciences network via a webinar, ahead of the publication of an emerging thinking document in early 2026.

The Core Group will further distil the outputs from the Collaboration Group and other associated CIC groups when they meet again in January 2026.

Summary of activities and outputs

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

Day 1: Thursday 20 November 2025			
Session	**Focus**	**Table groupings**	**Key outputs**
1	***Review and refining emerging big ideas under six big idea framework*** Using sector and discipline-adapted versions of the knowledge card bundles, each group was asked to allocate their assigned cards under at least two of the six big ideas. The session aimed to explore the potential for the big ideas to be less discipline-specific and to identify where clusters of knowledge could be most effectively aligned under each of the six big ideas within each sector/discipline.	Sector (Secondary/partners split to discipline-specific groups).	A model of the six big ideas that are less discipline specific. A Menti poll to gather feedback on preferences for the six big idea framework.
2	***Review emerging big ideas under three big idea framework*** Based on a suggestion from a Core Group member, the Education Scotland Science team presented a proposed three–big-idea framework, modelled using the existing set of knowledge cards. The session provided core group members with the opportunity to review, reflect on, and discuss the model.	Whole group	Use of a Menti poll to gather feedback on preferences for the three big idea framework
3	***Drafting of big ideas narratives*** Building on the agreed three–big-idea model, mixed-sector groups were asked during this session to draft: a title and statement expressing each big idea, a concise sentence summarising the idea, and a brief narrative outlining its key content. Feedback was provided by each group on each big idea.	Mixed sector groups	Reviewed and refined big idea title and statement, sentence and summary narrative.

Day 2: Friday 21 November 2025			
Session	**Focus**	**Table groupings**	**Key outputs**
1	***Redraft of big idea statement*** Building on the output and feedback from Day 1, groups reviewed and refined a different big idea title, statement, sentence and narrative. Feedback was again provided by each group on each big idea.	Mixed sector groups (as session 3 on Day 1)	Reviewed title, statement, sentence and summary narrative for the emerging three big ideas.
2	***Overarching concept ideation*** As part of a carousel activity, groups reviewed two overarching concepts and their narratives at a time (ten in total), identifying topic ideas and learning aligned with each concept. They then revisited their original concepts, reflecting on all the collated feedback and deciding whether each of their overarching concepts should be retained, removed or merged with another. A group consensus was then reached and the ten were refined to eight.	Mixed sector groups	Reviewed overarching concepts. Decisions about retention, removal and merging tracked via collaborative document.
3	***Drafting of overarching concept statements and narrative*** Building on the agreed output from Session 2 (eight overarching concepts were agreed), groups were asked to review and refine the title and draft a statement for their designated overarching concept. These draft statements were then reviewed by all groups, with dedicated time for feedback during the session.	Mixed sector groups	Draft overarching concept titles and narratives recorded via collaborative document.

Day 1 - Big Ideas

Session 1 - Review of framework with six big ideas

The Core Group revisited previous iterations of the emerging big ideas for the 3–18 sciences curriculum. This review refreshed the group's understanding of the journey undertaken by the CIC groups in developing the big ideas. It also provided an opportunity to reflect on the rationale behind decisions regarding the emerging overarching concepts and the renaming of some big ideas following the August Core Group workshop.

The Core Group was also asked to reflect on feedback relating to the emerging big ideas. This feedback was gathered through engagement with the sciences network via webinars, Critical Friends focus groups and Education Scotland Associates development days. Participants were invited to consider wider aspects, including the ambition of the revised curriculum, emerging big ideas from other curricular areas and Scottish Government expectations.

Core Group members worked in sector-based groupings. Each group was assigned sector and discipline-adapted knowledge cards, organised into six bundles: Biology, Chemistry, Physics, Environmental Science, Engineering and Technology, and Scientific Skills/Practices. Primary and ELC participants received all their adapted cards and worked together as one large group, while secondary participants and partners were divided into smaller discipline-specific groups for Biology, Chemistry, Physics, and Environmental Science. The remaining secondary cards for Engineering and Technology and Scientific Skills/Practices were distributed among the four discipline-specific secondary/partner groups.

Using the six big ideas framework (Science and me; Life and health; How things work; What stuff is made of; Our world and the universe; Be the change), each sector group was asked to consider their bundle of knowledge cards and place them under the big idea heading they felt offered the best fit. In doing so, groups were asked to ensure that the discrete subject content bundles for Biology, Chemistry, and Physics were distributed across a minimum of two of the three content-focused big ideas (Life and health; How things work; and What stuff is made of).

The outputs from each group were collated and reviewed. This analysis showed that, while groups did not experience difficulty in assigning the knowledge bundles, many bundles were seen to align with more than one big idea. As a result, it was difficult to reach agreement on the placement of the knowledge bundles under a single big idea, varying both by sector and within sectors.

A Menti poll was then conducted to gauge participants' views on the integrated approach to the six big ideas. The results indicated that ***two participants were strongly supportive, twenty felt they could work with the approach, and four expressed a definite opposition.***

Session 2 - Review of framework with three big ideas

Based on a suggestion from a Core Group member, the Education Scotland Science Team presented a proposed three–big-idea framework, modelled using the existing set of knowledge cards. The Core Group reviewed and discussed this model. The headings for this initial iteration of the model were:

1. **Being scientific: the scientist's toolkit (skills)**

2. **Scientific quest: understanding how things work (knowledge)**

3. **Science in action: changing our lives and world (action)**

A further Menti poll was conducted to gauge participants' views on the three big idea model of skills, knowledge and action. The results indicated *that **twenty-two participants were strongly supportive, three felt they could work with the approach, and one expressed definite opposition.***

Session 3 - Drafting of big ideas narratives

Core Group members were then divided into six mixed-sector groups, with the three big ideas distributed across the groups so that two groups focused on each big idea. Each group was asked to review the big idea title, develop a headline statement expressing the big idea, produce a concise summary sentence, and draft a brief narrative outlining its key content. Groups working on the same big idea then discussed their individual iterations and merged to create a single version for sharing with the other groups. These refined versions were reviewed by the remaining groups, and the feedback was collated to be used on Day 2.

The final refinement from this task, and the end point for day 1 is shown below

Big idea header and statement	Being scientific: developing my toolkit	-Scientific knowledge: what we know so far and why it matters	Be the change: science empowers us to take action
Big idea sentence	We explore how science works, how it is used and why it matters to me.	The current scientific knowledge we have to understand the world around us.	Science empowers us to use our knowledge curiosity and innovation to improve our lives and the world.
Big idea narrative summary	We are all curious. We question, explore and apply a range of skills to build our understanding of science. This allows us to make informed decisions in everyday life. We use science to questions and discover more about the world, our lives and pathways.	Our understanding of Life, the Earth and the Universe is built through cycles of curiosity, questions and experimentation. Science is the bridge between what we know and how we apply our knowledge. This knowledge helps us achieve a better tomorrow. Scientifically literate learners are empowered to make informed decisions.	Sciences reaches into every corner of society shaping how we live, work and care for our planet. By working together we can address local and global issues we care about.

Day 2 – Finalising big ideas and reviewing overarching concepts

Session 1 - Redraft of big idea statement

Working in the same mixed sector groups, each group was assigned a different big idea (from the one they worked with on Day 1). They used the feedback provided from the end of Day 1 to refine the title, statement, sentence and narrative, resulting in a final agreed version. This final agreed version was posted to the wall for all to read and add final comments. It was agreed (due to time) that Education Scotland staff would take these comments and make any further required refinements. These versions along with the comments are included below:

	Raw output from the task at Core group day (Draft 2)		
Big idea header and statement	**Being scientific: building my skills toolkit**	**Scientific knowledge – what we understand so far**	**Be the change – science in action**
Big idea sentence	We learn how science works and how we use it to answer big questions about our world.	Scientific understanding is built on knowledge which develops over time.	Applying our understanding of the sciences empowers us to make innovative, responsible choices and changes now, and for the future.
Big idea narrative summary	Being scientific means, we all work together to develop a range of knowledge and skills, building our understanding of science. Curiosity encourages us to use practical, enquiry and investigative skills to shape our science identity.	Scientific knowledge is vital to enable learners to understand the world around them and helps them to find their place within it. Our understanding of the sciences is refined over time. Linking what we observe with what we know strengthens learners' engagement with scientific practices. This empowers learners to become scientifically literate.	Through the sciences, we develop our natural curiosity using knowledge and creativity, we can design solutions to current and future challenges facing people and the planet. Science is not only about understanding the world – it is about improving it. Developing our science identity, our confidence, knowledge and skills and connections, helps us see the sciences as something we can do and see.
Comments	• Is it we or learners we should be using?	• Big idea title – Knowing science?	• Swap words in title so that it starts with science

• Using evidence – linking what we know so far. Observe – being scientific, Empower – action • Being scientific means sharing and collaborating with others?	• Big idea narrative "our understanding of the sciences is refined over time" should this be based on evidence?	i.e. Science in action – Be the change • Do we need "and changes" in Big idea sentence? • Do we need "Through the sciences we develop our natural curiosity" in the Big idea narrative? • Do we need to acknowledge that scientific discoveries and inventions can have been used for negative purposes. "improving" • Big idea narrative – not just solutions (we don't need to assume a bad starting point). Perhaps something about invention or designing the future? • Big idea narrative "Developing …… see" this could be a sentence from Being scientific.

Session 2 – Overarching concept ideation

Discussion points were shared with participants. These illustrated the purpose, value and international precedent for including overarching concepts within curriculum design. The stimulus also outlined that it is not expected that practitioners use overarching concepts in daily planning, but they provide essential structure for long-, medium- and short-term planning and help learners see how learning connects across the sciences. Furthermore, the stimulus illustrated that concepts act as high-level organisers that support learners and practitioners to see how scientific ideas connect across disciplines, levels and real-world contexts. They bring coherence to the curriculum, reduce topic overload, strengthen conceptual progression, and play a key role in enabling interdisciplinary learning.

Participants began by exploring an initial set of ten overarching concepts (developed by Education Scotland and informed by evidence) through a carousel activity. For each overarching concept they were provided with the title and a suggested definition to aid understanding. Working in mixed-sector groups, each group reviewed two concepts at a time, identifying topic ideas, learning

examples and applications from across the sciences. -Contributions were captured on post-it notes and in the shared collaborative document, supported by facilitators who remained with each concept throughout.

Following the carousel, groups returned to their original concepts and reviewed the full set of collated ideas. Each group then decided whether their concepts should be:

- **Kept**
- **Merged with another concept**
- **Removed**

Decisions were informed by the comments made by Core Group members. Feedback was recorded both physically and digitally. Participants then voted on whether or not they agreed or disagreed with the decision to keep, merge or remove. -Facilitators summarised the key points and produced a consolidated list.

The original ten concepts were refined to **eight overarching concepts**:

1. Energy and change
2. Ethics
3. Patterns and trends
4. Relationships and interactions
5. Scale, proportion and quantity
6. Shape, structure and function
7. Sustainability
8. Systems and cycles

Session 3 - Drafting of overarching concept statements and narrative

With eight concepts agreed, participants chose which concepts they would like to work on. Each group drafted a short, accessible narrative for their concept. Statements were required to be concise (no more than two sentences) and accessible.

These were as follows:

Overarching concept	Concept statement
Energy and change	Energy is an indication that chance can happen. We can use the concept of energy to describe and understand change. Energy can be stored and transferred.
Ethics	Ethics in science helps us make informed and responsible decisions based on evidence, reasoning and shared values.
Patterns and trends	Patterns and trends help us to notice what stays the same and what changes, so we can explain, compare and predict what happens next
Relationships and interactions	Everything is connected which allows us to explain causes from observed effects

Scale, proportion and quantity	Science helps us measure and compare the properties of systems within an around us. This can vary from the small scale of atoms to the vastness of the universe.
Shape, structure and function	The way something is shaped and structured determines its properties, how it works, and what is can be used for.
Sustainability	Sustainability is using Earth's resources carefully. Everything that we need for our survival and well-being depends on our natural environment. Science helps us make responsible choices to create and maintain a balance. This allows humans and nature to exist in harmony and support present and future generations.
Systems and cycles	The natural and physical world can be understood as a series of systems and cycles. These operate in repeat and predictable ways which helps us make sense of ourselves and the world around us.

Participants completed a gallery walk to review all draft narratives, offering feedback on something they liked, something they thought needed more thought and if they had any ideas/ suggestions. Common themes included refining key terminology, ensuring consistency across concepts, and strengthening links to real-world contexts. It was agreed (due to time) that the Education Scotland team would take these comments and make any further required refinements.

Evaluation overview

Summary

The evaluation outcomes indicate strong confidence in both the process and the emerging curriculum structure. Responses suggest that participants feel informed, valued and well-positioned to progress into the next stage of consultation and drafting knowledge and skills statements.

Evaluation output

Of the **26** participants (practitioners and partner representatives) that attended the event across the two days, there were **19** completed evaluation forms (**73.1%** response rate). Some participants could only attend the first day and therefore have not completed the evaluation.

- **Overall how would you rate the quality of the two-day workshops?**
  Of the **19** people who completed the evaluation, **19 (100%)** rated the event as very good or good – with **very good (84%)** and **good (16%)**.

- **I feel that my opinions and suggestions are being heard and included in the Sciences Curriculum Improvement Cycle**
  18 out of the **19** respondents **(94.7%)** stated they felt their opinions and suggestions are being heard in the CIC process – with **strongly agree (68%)** and **agree (26%)**.

- **I trust the Sciences Curriculum Improvement Cycle process to deliver better outcomes for learners in Scotland?**
  18 out of the **19** respondents **(94.7%)** stated they trust the sciences CIC process – with **strongly agree (58%)** and **agree (37%).**

- **Do you believe that the Sciences Core group is making progress with a new sciences curriculum?**
  18 out of the **19** respondents **(94.7%)** stated that they believe that the Sciences Core group are making progress with a new sciences curriculum – with **strongly agree (63%)** and **agree (32%)**.

Comments from respondents at Workshop 3:

"Excellent tasks from Education Scotland colleagues to promote deep thinking, discussion and collaboration. I feel like we have made incredible progress and the work ahead of us is becoming clearer as a result."

"We achieved what we set out to do."

"I feel great progress has been made in the past two days across creating agreed outputs across sector groups."

Next steps

The agreed big ideas and overarching concepts emerging from the two-day workshop mark a significant milestone in the sciences CIC process, providing a strong foundation for the next phase of consultation and development. The outputs from the workshop will inform wider engagement, beginning with an in-person event with the Collaboration Group on 03 December, followed by consultation with the wider sciences network through a webinar. This engagement will support the publication of an emerging thinking document in early 2026.

The Core Group will reconvene for a further two days in January 2026 to explore the core knowledge and skills in greater depth, including how these translate into a progression framework for sciences from ages 3–18.

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

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