



### **Towards an Evolved Technical Framework**

### 13<sup>th</sup> February 2025

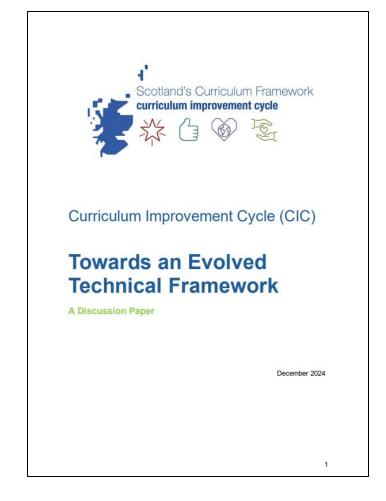


Scotland's Curriculum Framework curriculum improvement cycle

Frèam-obrach Curraicealam na h-Alba cearcall leasachadh a' churraicealaim



- Introduction & re-cap of Webinar #1 & #2
  Ollie Bray
- Towards an Evolved Technical Framework
  Andy Creamer
- Next Steps and Communication
  - Ollie Bray



# **CIC – Information Webinar Series**

### SESSION 1: AN INTRODUCTION TO THE CURRICULUM IMPROVEMENT CYCLE



SESSION 2: THE BACKGROUND AND CASE FOR CHANGE



SESSION 3: TOWARDS AN EVOLVED TECHNICAL FRAMEWORK



27th January, 4pm

5th February, 4pm

13th February, 4pm

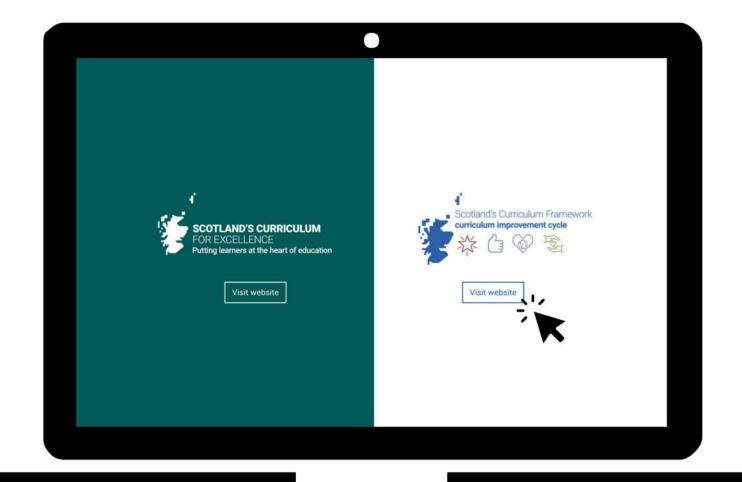
WE ARE HERE



Frèam-obrach Curraicealam na h-Alba cearcall leasachadh a' churraicealaim

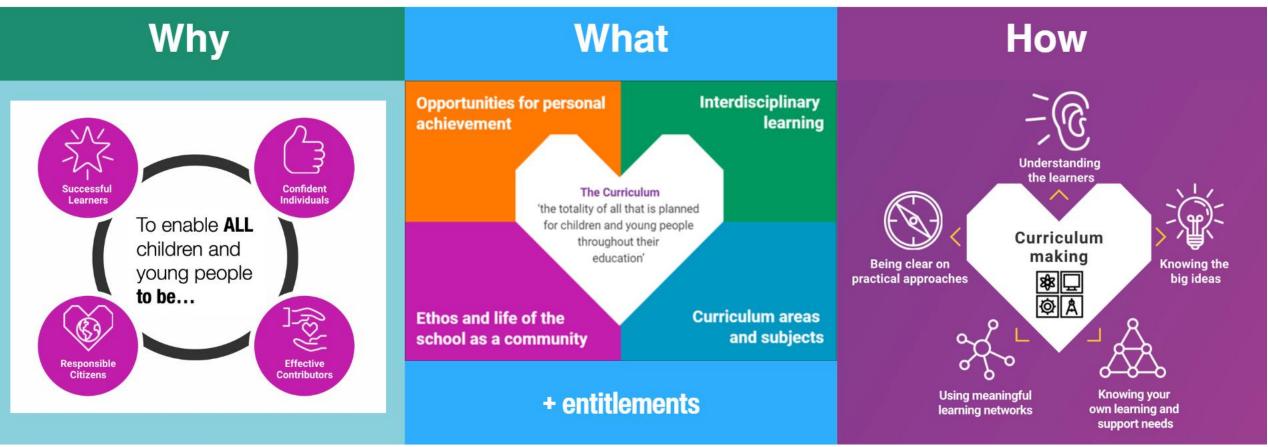


## scotlandscurriculum.scot



# Scotland's curriculum framework



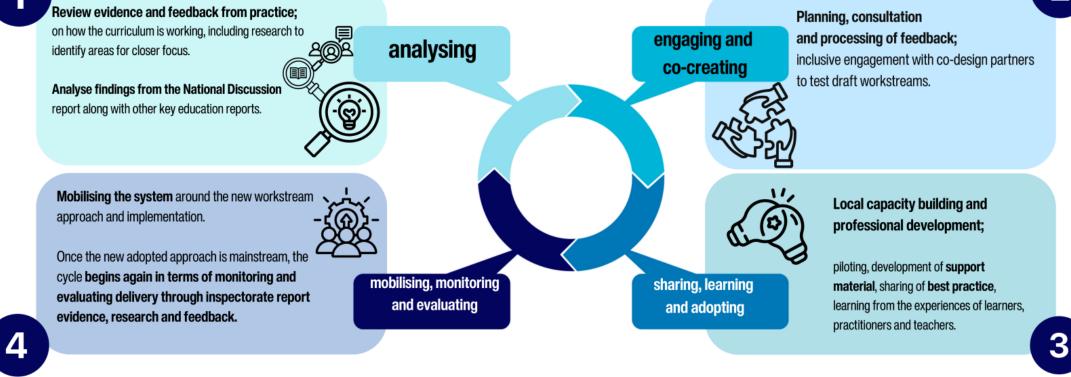




### Scotland's Curriculum Framework

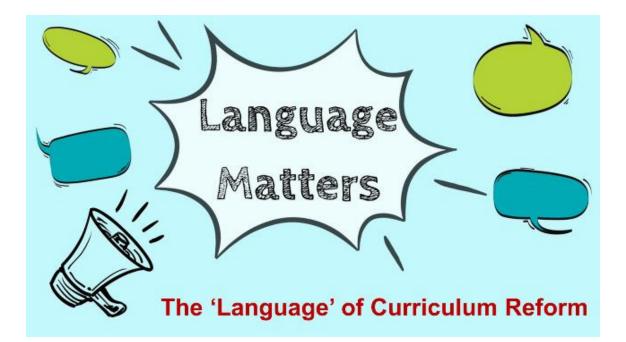
### curriculum improvement cycle

Frèam-obrach Curraicealam na h-Alba cearcall leasachadh a' churraicealaim



Holistic review of Scotland's Curriculum once every 10 years -

e.g. a National Discussion type exercise





attribute/s; Big idea/s; capacity/ies; concept; curriculum; curriculum design; curriculum making; inter-disciplinary learning (IDL); knowledge; pedagogy; Scotland's Curriculum Framework; service design; skill(s) and technical framework.



The Technical Framework within a curriculum is used by teachers and practitioners to plan what children and young people will learn. In Scotland this would include guidance such as the Es&Os, Benchmark and approaches to moderation.

Scotland's Curriculum Framework								
Overarching Framework The Purposes: The Four Capacities								
Statutory Framework	Policy Framework	Technical Framework	Qualifications Framework					
<b>eg:</b> Number of days a school is open, Registration, etc.	eg: 1+2 Languages, 2hrs / periods of PE, etc.	eg: Es & Os, Benchmarks, National Guidance, Course Specifications, Moderation, Responsibilities of All, etc.	eg: SCQF Credit Rates Qualifications (including SQA Qualifications).					



Curriculum Improvement Cycle (CIC)

### Towards an Evolved Technical Framework

**A Discussion Paper** 

December 2024



# **Reflective Questions**

- Which of the key issues such as clarity on knowledge or disconnect between BGE and senior phase should be our key priorities to address in an evolving technical framework ?
- In what ways can teacher and practitioner agency and autonomy be promoted in an evolving technical framework ?
- What opportunities may arise from having a consistent framework from 3-18?
- What are the key aspects that need to be considered for successful implementation of a new technical framework?
- Any other thoughts?



Re-assess CfE's aspirational vision against emerging trends in education to take account of evolutions in education and society (1.1)

Find a better balance between breadth and depth of learning throughout CfE to deliver Scotland's commitment to providing all learners with a rich learning experience throughout school education (1.2)

Adapt the Senior Phase to match the vision of CfE (1.3)

**Continue building curricular capacity** at various levels of the system (1.4)



Implementing Education Policies

Scotland's Curriculum

THE FUTURE

### **Towards an Evolved Technical Framework**





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## **Evolving the Technical Framework**







Views of teachers from pilot curriculum reviews and CIC groups OECD and other SG commissioned independent review recommendations Analysis of international approaches to curriculum review





**F**71

Engagement with international educators and education systems Education Research and international evidence

Key features of high performing systems

nework B "provide parameters for the selection of content and a process for prioritising and deprioritising"

"GREATER CLARITY ON THE KNOWLEDGE AND SKILLS LEARNERS SHOULD HAVE AT KEY POINTS IN THEIR LEARNING" "clarity on progression from Early Learning and Childcare (ELC)"

"clarity on the role and purposes of knowledge and skills"

Criteria for an evolved technical framework emerging from the pilot curriculum reviews



"adaptable to realities of the differing nature of sectors and curriculum areas"

"flexibility and autonomy at the level below the key ideas" "a 3-18 'framework' alignment and consistency with Senior Phase" "a clear position in terms of cross curricular themes and expectations"

"To provide more detail without drifting towards strict specification in learning areas, it may be a helpful first step to formulate big ideas, as a growing number of education systems have been developing. Systems such as British Columbia (Canada), Korea, Norway and Singapore have been selecting broad overarching themes that relate to a number of subjects within curriculum areas of learning."

Implementing Education Policies

Scotland's Curriculum for Excellence



## **Insights from high-performing school systems:**

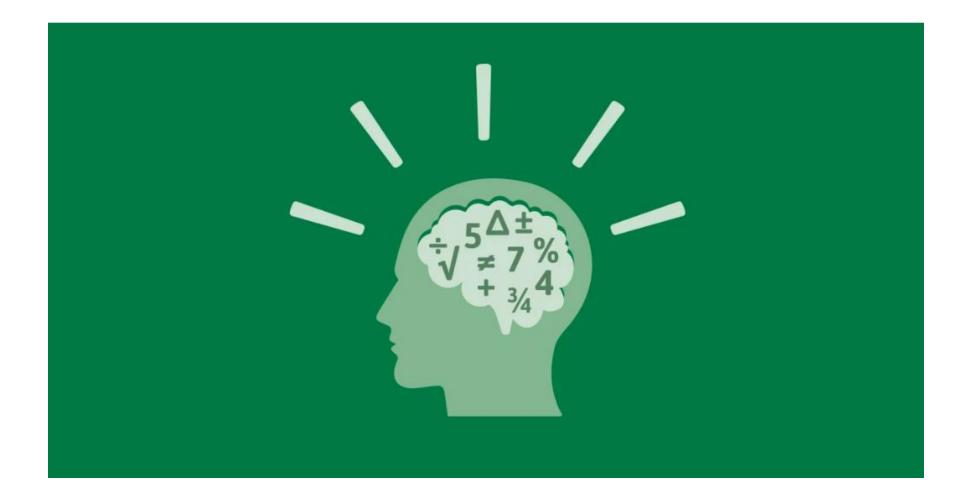
A Comparative Study- Korea, Hong Kong, Finland, Estonia, British Columbia: Master 2023

### The position of knowledge in high performing systems:

Frameworks are organised around traditional disciplinary knowledge such as national language and literature, mathematics, science, and the social sciences High priority to developing students' <u>deep understandings of</u> <u>essential disciplinary concepts</u>, principles, and methods which may be relatively few in number. Opportunities for students to develop deeper conceptual understandings and <u>apply their</u> <u>learning to a variety of</u> <u>meaningful, often real-world,</u> <u>contexts</u>.



### **Developing Conceptual Understanding**

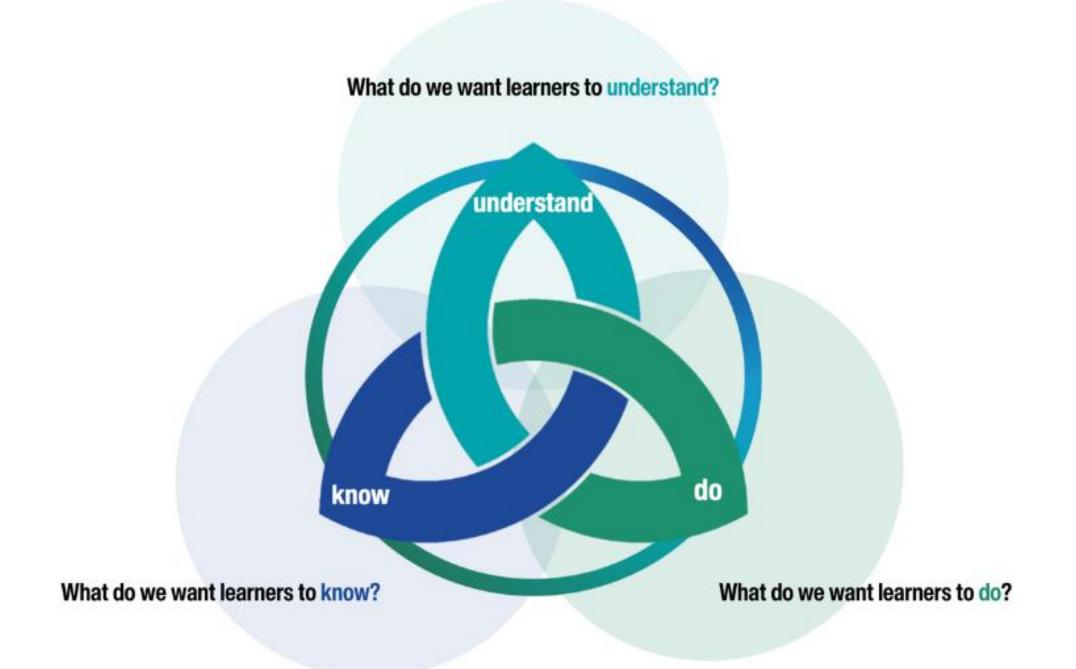


## **Know-Do-Understand**

'Curriculum statements need to make clear what children should know factually, understand conceptually and be able to do in [and across] different disciplines'

(Erickson 2012)





# **Outline – Technical Framework**



What do we want learners to UNDERSTAND-



What do we want learners to KNOW and be able to DO-



What do we want learners to know and be able to do at different stages in their learning journey –

# **Outline – Technical Framework**



What do we want learners to UNDERSTAND-The Big Ideas



What do we want learners to KNOW and be able to **DO-Conceptual Knowledge and Skills** 

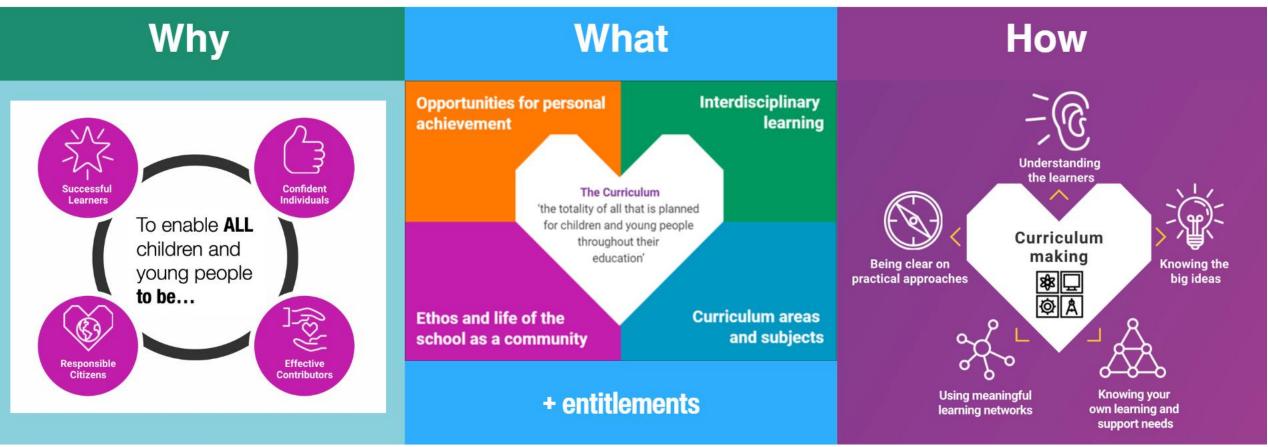


What do we want learners to know and be able to do at different stages in their learning journey –

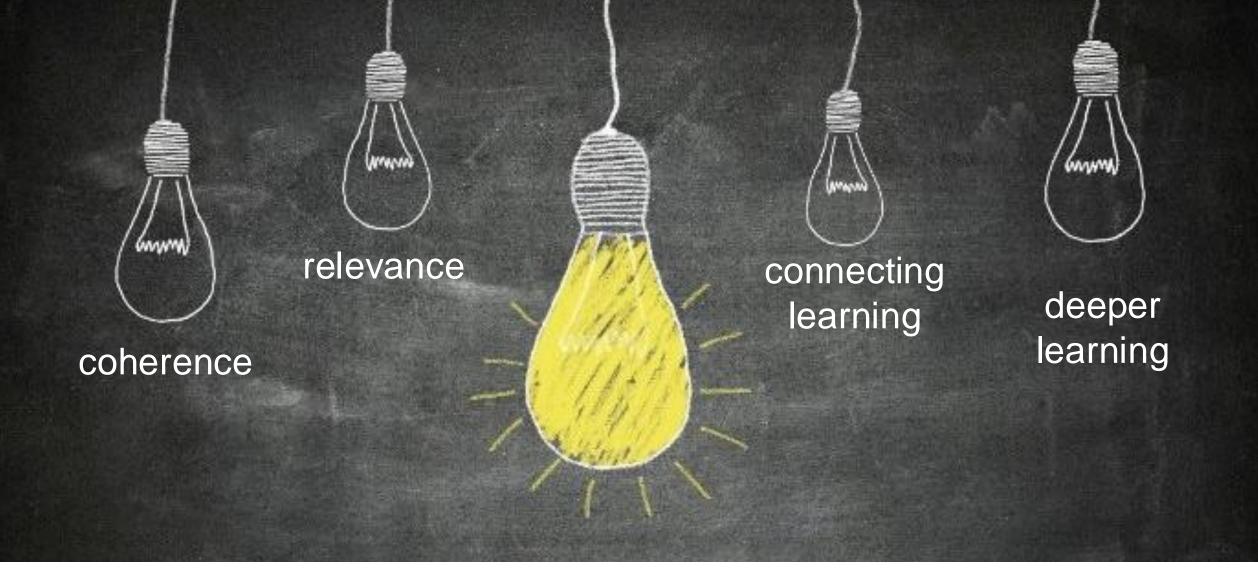
**PROGRESSION** across the learning journey

# Scotland's curriculum framework









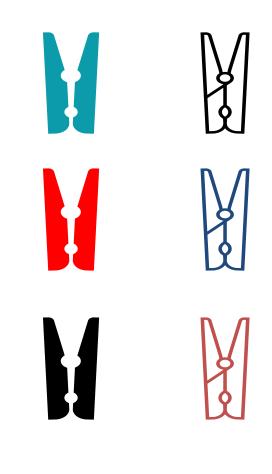
# The Case for a 'Big Ideas' Approach

"Big Ideas are generalised summaries of what we want students to understand by the end of their journey through the curriculum (or cross curricular area) in school. They are common destinations, which can be reached by many alternative routes. Because Big Ideas describe what we want students to understand, they frame the questions that lead to that understanding. They are unable to do this without contexts provided by content".

"The development of **big ideas provide a rationale and a framework for inclusion of particular topics and types of study within the school curriculum**".

"Big Ideas perform a similar role in students' learning as concepts in that they **are 'pegs' on** which students can hang the myriad pieces of knowledge they acquire over the years of study in order to make sense of them".

"It is therefore unlikely that students will ever encounter a unit of work with the name of a Big Idea as its title, but in every unit of work the learning outcomes will be defined in relation to them".







'Big Ideas' mean different things in different parts of the world

A 'Big Idea' captures the core understanding children and young people will develop throughout their curricular journey from early years onward.

It will set out **overarching ideas /concepts**, have relevance for learners, support progression and the selection of content





# **Early prototyping**

- These are illustrations and not the final 'product'
- The examples you have focus on knowledge , there would be similar information re skills
- They have been developed at pace and it is challenging
- They are based on the current Es&Os the CIC groups will determine the future
- We are trying to **illustrate opportunities** ie clarity, flexibility, progression etc
- The process will be iterative
- This is **not the curriculum** it is one part and aims to clarify and simplify something that there are currently issues with



Big Idea 1:	Big Idea 2:	Big Idea 3:	Big idea 4:	Big Idea 5:
Planet Earth	Forces, electricity	Biological systems	Materials	Topical science
The Planet Earth curriculum area focuses on the interconnected systems and processes of Earth, our solar system, and the broader universe. Learners explore how Earth's four subsystems (land, water, air and life) are interdependent and essential for sustaining life. They develop an understanding of the relationships between living things and their environment, recognising the diversity of life and the processes that support it. Learners also examine the impact of human activities on all forms of life and acknowledge that Earth provides the resources necessary to sustain life, except for energy from the Sun. As stewards of these finite resources, learners are encouraged to understand the vital interactions between Earth's systems and the solar system. This understanding equips them to address the challenges facing our planet and make informed decisions to protect and responsibly use Earth's resources.	and waves The Forces, Electricity and Waves curriculum area encourages learners to investigate a range of physical phenomena, including light, sound, heat, electricity, magnetism, waves, forces, and motion, all connected by the unifying concept of energy, which changes form without being lost. Through the study of physics, learners develop a deeper understanding of how different aspects of the physical world interact and how these interactions can be modelled and represented. This understanding supports learners in exploring current issues and challenges, while also considering innovative technological solutions grounded in physical principles.	Biological systems provide explanations about the organ systems of the human body and how the physiological processes and interactions of these systems enable survival and interaction within their environment. Learners develop an understanding of biology at a cellular level and that all the basic functions of life are the result of what happens inside the cells which make up an organism. Learners will also explore the processes by which genetic information is passed on from one generation to the next, identifying patterns of inheritance and progress to be able to make more informed judgement about social, ethical and biological implications of the use of data derived from genetic information.	The <i>Materials</i> curriculum area helps learners to explore materials, focusing on developing an understanding of matter and the chemical changes it undergoes. Learners explore the composition and properties of materials, the changes they experience, and the energy involved in these processes. They apply their understanding of the fundamental properties of materials to interpret the world around them, considering the behaviour of elements, mixtures, and compounds. Learners communicate their findings using the symbols and conventions of chemistry. This knowledge helps them address science-related challenges, such as environmental sustainability, and the development of new materials, medicines, and energy sources.	The Topical Science curriculum area helps learners explore and understand what science is and how scientists work. They develop the skills, attitudes, and values needed to build a foundation for understanding the world. Learners appreciate that scientific knowledge is both reliable and constantly evolving in response to new evidence. They gain insight into how scientific investigations are conducted and recognise the social value of scientific knowledge. By exploring current science issues, learners understand how scientific ideas are communicated and learn to link scientific knowledge to everyday decisions and actions. These outcomes are explored through key contexts where scientific knowledge has developed and continues to evolve.

### **Sciences Concepts**

Big Idea 1: Planet earth	Big Idea 2: Forces, Electricity and Waves	Big Idea 3: Biological systems	Big Idea 4: Materials	Big Idea 5: Topical science
Biodiversity & interdependence	Forces	Body systems & cells	Properties & uses of substances	Topical science
Energy source & sustainability	Electricity	Inheritance	Earth's materials	
Processes of the planet	Vibrations & waves		Chemical changes	
Space				

### Science – Second level

#### **Planet Earth**

Biodiversity and interdependence: Biodiversity and human impact. Energy sources and sustainability: Energy conservation and transfer. Processes of the planet: Water cycle. Space: Solar system features.

### Forces, electricity and waves

Forces: Force of gravity and friction and measuring forces. Electricity: Circuits displayed in circuit diagrams and understanding how electrical components work. Waves: Properties of light.

### **Biological systems**

**Body systems and cells:** Body systems, health and microbiology. **Inheritance:** Life cycles and inherited vs non-inherited characteristics.

### Materials

Properties of substances: States of matter. Earth's materials: Rocks. Chemical changes: Physical and chemical changes.

#### Inquiry and investigative skills

- Formulate questions and predictions, with assistance
- Identify dependent, independent and control variables, with assistance
- Design investigations
- Select appropriate methods of recording data/observations
- Draw basic conclusions
- Report collaboratively and individually, using a range of methods
- Collate, organise and summarise findings, with assistance
- Use appropriate scientific vocabulary and acknowledge sources, with assistance
- Evaluate investigations and suggest one improvement

#### Scientific analytical thinking skills

- Apply scientific analytical thinking skills to less familiar contexts
- Apply understanding, and a combination of more than one science concept, to solve problems

#### Scientific literacy

- Present a reasoned argument based on evidence, and engage with the views of others
- Demonstrate understanding of the relevance of science to their future lives
- Relate scientific skills to a wide variety of STEM careers

Second	Biodiversity and interdependence The diversity shown amongst living things with regards survival and extinction. Processes of the planet necessity of water water conservation the water cycle	Forces An object's shape and the density of the material affect buoyancy	Body systems and cells Body systems structure and function. Potential health problems associated with different organ systems. Growth and action of different microorganisms.	Properties and uses of substances Phases of matter & changes of state. Physical and chemical ways of changing materials. Mixtures – separate using a difference in component properties.	Topical science Science impact on everyday lives.	
Level	Biodiversity and interdependence Interactions and energy flow between plants and animals in food chains and food webs. Beneficial uses of plants to society. Risks and benefits of fertiliser use. Energy sources and sustainability Conservation of energy transforming energy from one form to another.	Electricity Components in a circuit transfer energy. Simple circuits as circuit diagrams using component symbols.	Inheritance Differences in the stages of development in the lifecycles of plants and animals.	Chemical changes Conservation of water uses of water.	Topical science The links between scientific skills and STEM careers.	
	Energy sources and sustainability Renewable and non- renewable energy sources. Space Key features of the solar system.	Forces Gravity. Measuring forces. Force of friction. Vibrations and waves Properties of light.	Inheritance The role of genes in determining inherited characteristics and be able to categorise characteristics as inherited and non- inherited. The uniqueness of a person's DNA fingerprint.	Chemical changes Chemical reactions. Making new products. Earth's materials Types of rocks that make up Earth's surface.	Topical science Items of current scientific interest at school, community, national and global level. Ethical, moral, economic etc factors around topical science issues.	

Second	
Level	

Risk taking Substances can have both a positive and negative impact on the human body

Substance misuse has consequences for mental and emotional wellbeing

Substance misuse can effect decision making and life choices

Rights and Responsibility There are actions that can help others in trouble who have misused substances

Choice and Decision- making Attitudes to the use of substances can be influenced by culture, peers and the media

#### Relationships

The body undergoes changes during puberty, and this helps to understand what happens as the body grows

Sexuality is a part of life and should be respected

Parenthood requires caring for others and involves patience, responsibility, and empathy.

Respecting personal space and setting boundaries helps build healthy relationships.

Different types of abuse exist and it is important to recognise and prevent harmful situations.

#### Career & Pathways

Different jobs and careers have different responsibilities and require different skills.

Individuals can access training to help prepare them for different jobs and careers Diet & Nutrition Food has a journey from source to consumer

Nutritional needs can be met by healthy eating guidelines

Food labelling can help us make more informed and healthier choices

Life stages may affect dietary requirements and with personal preferences can result in dietary restrictions

Food allergies and cultural practices can influence food choice

Rights and Responsibility Access to food is a basic human right

Safety & Hygiene Food handling and preparation requires safe and clean practices

Choice and Decision-making Consumer behaviour is influenced by advertising and media techniques. Active & Healthy Lifestyles Sleep is essential for growth, development, and overall health

Rest helps the body recover from physical activity and mental exertion

Healthy choices can have a positive impact on your mental, emotional, social and physical health and wellbeing

Physical activities can benefit health and wellbeing

Fitness The body uses different energy systems for different types of activities

Stamina is the ability to sustain physical activity over time

Flexibility is the range of motions in joints and muscles

Strength is the ability of muscles to exert force

Tactics and strategies Team tactics and formations can be used to improve performance

Tactics can respond to the strengths and weaknesses of opponents

Movement, Body and Performance Skills and strategies impact on performance

Feedback can help plan improved performance

# **Position of knowledge**

- Statements should provide clarity on what learners should know at different points in their learning to develop conceptual understanding
- Clarity on what is progression in knowledge and how it develops conceptual understanding
- Outlines the knowledge that would be expected at different levels
- Context free as far as possible decisions on context to use are left to teacher
- Flexible to respond to natural differences across curriculum areas- broad levels or broken down into stages as appropriate to curriculum areas and the structure of knowledge in these areas



## **Outline 3-18** (Example Illustration)

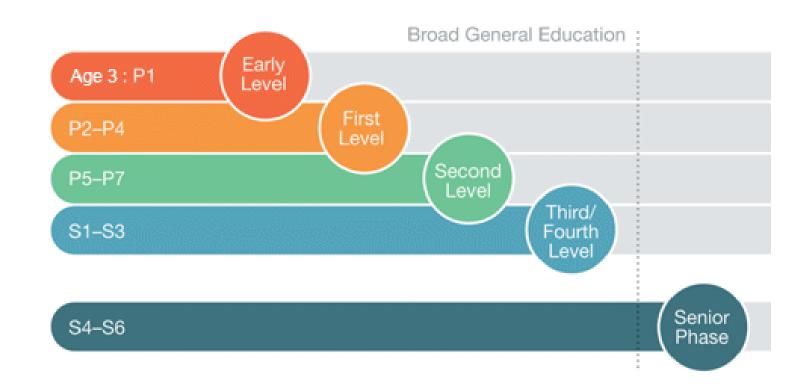
Curriculun Area	n B	Broad General Education (CfE Levels)					Possible Senior Phase Qualification Pathw					ays	
							SCQF L5			SCQF L6			SCQF L7
Maths	Early Level	1 <sup>st</sup> Level	2 <sup>nd</sup> Level	3 <sup>rd</sup> Level	4 <sup>th</sup> Level		SCQF L5			SCQF L6			SCQF L7
							SCQF L5						
							SCQF L5			SCQF L6	SCQF L6		SCQF L7
Social Studies	Early Level	1 <sup>st</sup> Level	2 <sup>nd</sup> Level	3 <sup>rd</sup> Level	4 <sup>th</sup> Level		SCQF L5	SCQF L5		SCQF L6	SCQF L6		SCQF L7
							SCQF L5			SCQF L6	SCQF L6		SCQF L7
							SCQF L5			SCQF L6	SCQF L6		SCQF L7
Science	Early Level	1 <sup>st</sup> Level	2 <sup>nd</sup> Level	3 <sup>rd</sup> Level	4 <sup>th</sup> Level		SCQF L5	SCQF L5		SCQF L6	SCQF L6		SCQF L7
							SCQF L5	SCQF L5		SCQF L6	SCQF L6		SCQF L7

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# Coherence & Clarity

### Levels:

- Position of Fourth Level
- Purpose of Fourth Level
- Relationship between Fourth Level and SCQF Level 4 (inc: National 4) as part of a 3-18 framework







# **Cross Curricular Expectations**

• Editiourar

## **CIC: addressing existing inconsistencies and incoherences**

6

curriculum for excellence: responsibility of all practitioners

Health and wellbeing across learning Literacy across learning Numeracy across learning



### curriculum for excellence: health and wellbeing experiences and outcomes

**HMle** 

Scotland



Numeracy is the knowledge, skills and attributes needed in order to apply and use mathematics in everyday life, at home, work or in a learning environment.

#### **Number Sense**

Having an understanding and sense of number is crucial for everyday life, study and work. The concepts of counting, types of numbers and their structure, arithmetic operations, proportional reasoning, estimation and comparison remain consistent when applied across a range of contexts. A robust understanding of and mathematical language, and an ability to reason algebraically are all needed to develop and choose valid strategies to solve previously unseen problems, and to communicate clearly decisions and solutions.

#### Spatial Understanding

Spatial understanding allows us to negotiate the physical space in which we live. The concept of position and movement provides a language to describe the location of objects and allows for the development of a sense of direction. Measurements of length, area, volume, angle, mass, time and temperature can be described and made using appropriate language, scales and units of measurement. The shape and properties of everyday items impact on how they are designed and used. Through exploring these ideas, we can move beyond what we can see in front of us and begin to visualise what could be.

#### Making Sense of Data

Data can be gathered, presented and analysed to help understand the world, solve problems and make informed decisions. Data can be quantitative or qualitative and presented in different forms to help interpret and understand it. Representations of data may be misleading, either intentionally or accidentally so care must be taken in interpreting what they do or do not show.

Probability helps us predict the behaviour of events where the outcome is uncertain. Appropriate language can be used to describe the likelihood of an event happening to make informed decisions, calculate risk and think critically about future plans. "provide parameters for the selection of content and a process for prioritising and deprioritising"

"GREATER CLARITY ON THE KNOWLEDGE AND SKILLS LEARNERS SHOULD HAVE AT KEY POINTS IN THEIR LEARNING" "clarity on progression from Early Learning and Childcare (ELC)"

"clarity on the role and purposes of knowledge and skills"

Criteria for an evolved technical framework emerging from the pilot curriculum reviews

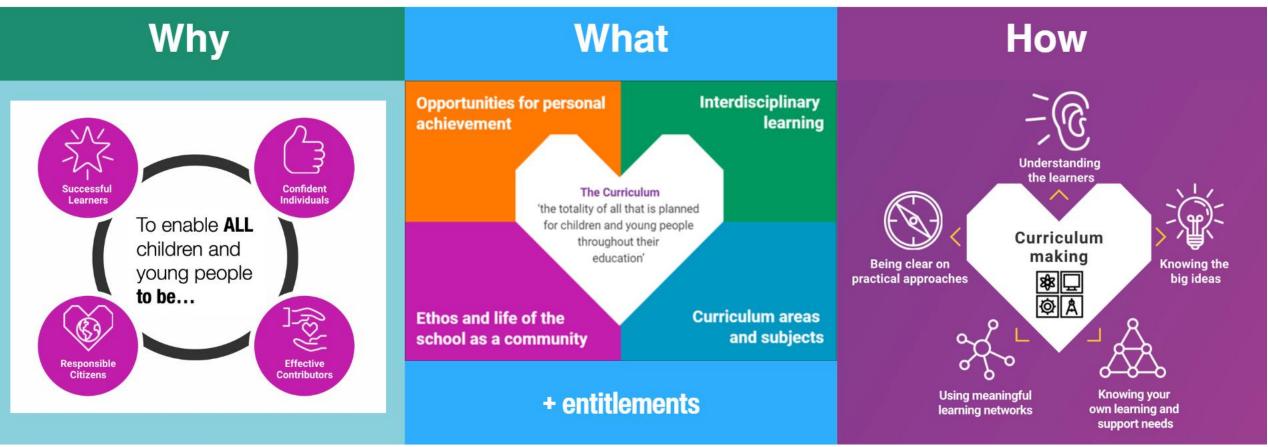


"adaptable to realities of the differing nature of sectors and curriculum areas"

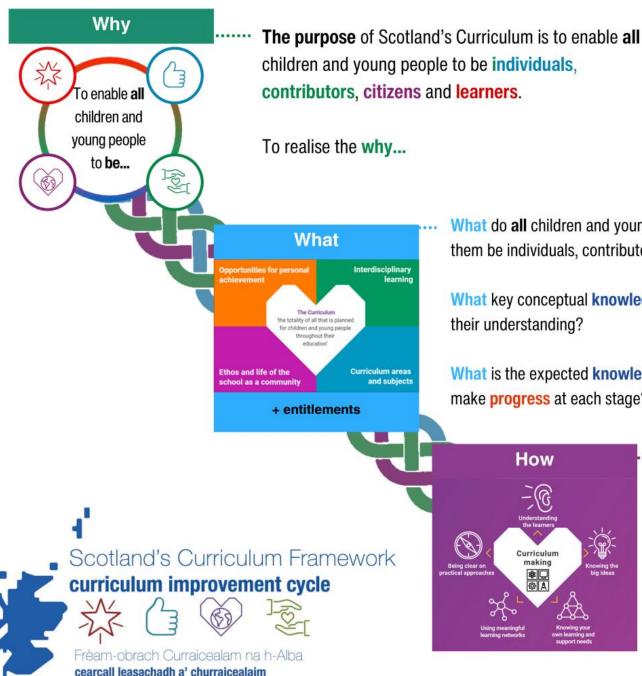
"flexibility and autonomy at the level below the key ideas" "a 3-18 'framework' alignment and consistency with Senior Phase" "a clear position in terms of cross curricular themes and expectations"

# Scotland's curriculum framework









The interconnected layers of Scotland's Curriculum Framework

What do all children and young people need to understand across the curriculum to help them be individuals, contributors, citizens, learners?

What key conceptual knowledge and skills do all children and young people need to help their understanding?

What is the expected knowledge and skills required to help all children and young people make progress at each stage?

How

Curriculum making

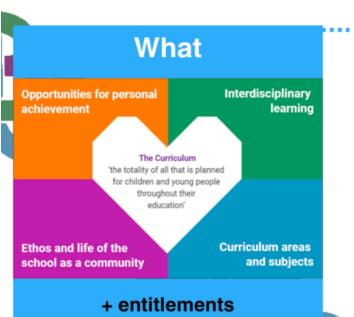
How should the interactions, experiences, spaces and time of learning environments be best organised and approached - alongside the consideration of the four contexts for learning - to allow all children and young people to flourish and develop their expected knowledge and skills?

How best can capacity building, professional learning and support materials for educators across all sectors be developed to support effective organisation and informed pedagogical teaching and learning approaches?



The purpose of Scotland's Curriculum is to enable all children and young people to be individuals, contributors, citizens and learners.

To realise the why...



What do **all** children and young people need to **understand** across the curriculum to help them be individuals, contributors, citizens, learners?

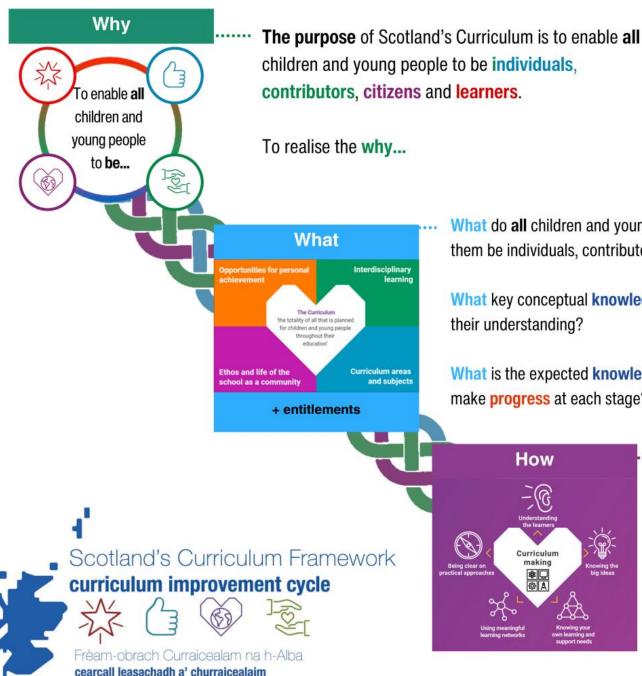
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A Discussion Paper

December 2024



#### SESSION 3: TOWARDS AN EVOLVED TECHNICAL FRAMEWORK



1 Framework t cycle

#### 13th February, 4pm

## **Next Steps and Communication**



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SESSION 2: THE BACKGROUND AND CASE FOR CHANGE



#### SESSION 3: TOWARDS AN EVOLVED TECHNICAL FRAMEWORK



27th January, 4pm

5th February, 4pm

13th February, 4pm

# **Key Background Publications**

## November 2024:

• A case for change: findings from the pilot curriculum reviews - live

## December 2024:

- Language Matters a glossary of terms live
- Towards a new technical framework live

## March 2025:

• Working together to make change happen

## June 2025:

• The journey to change



work

## Scotland's Curriculum Framework Curriculum Improvement Cycle

**Education Scotland** 

Terminology

## scotlandscurriculum.scot



Latest News

Frèam-obrach Curraicealam na h-Alba cearcall leasachadh a' churraicealaim

## SESSION 3: TOWARDS AN EVOLVED TECHNICAL FRAMEWORK



13th February, 4pm

Leave feedback on this session



