

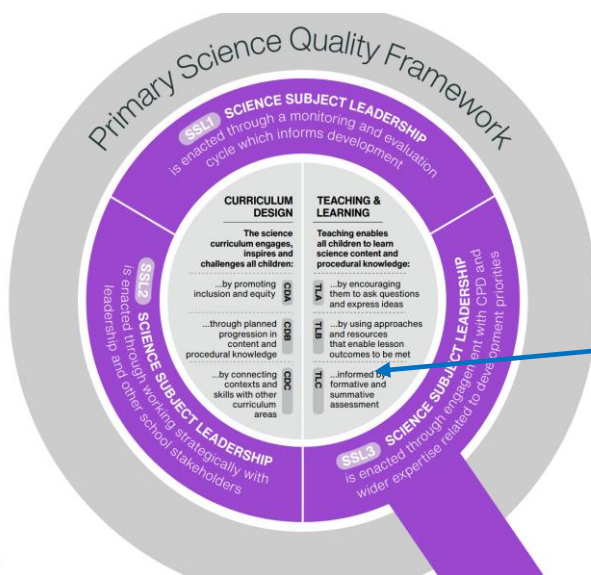
Science Development Planner: Implement

This is the second part of the Science Development Planner, designed to support the Implement phase of the PSQM Development Cycle.

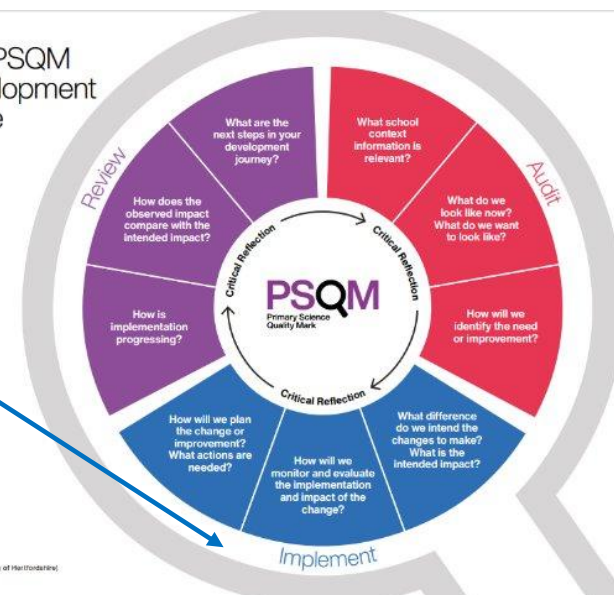
The SciDP: Implement supports:

Strategic Thinking: Defining school development priorities and their intended impact (focus of Module 2).

Operational Thinking: Planning actions to address these development priorities (focus of Module 3).



The PSQM Development Cycle



A table to complete is provided for each Principle of Practice.

An additional table is available for schools planning to validate for PSQM Outreach.

To be used alongside Science Development Planner: Implement GUIDANCE document

The science curriculum engages, inspires and challenges all children

Strategic Development Priority

CDA: To develop practice...by promoting inclusion and equity

Development priority within the context of your school

~~Because some lessons and learners require alternative methods of recording to writing,~~

~~We need to explore alternative provisions for recording and evidencing activities for younger, EAL and SEND children and encourage older and more able children to select the most appropriate method of recording.~~

Because some learners require additional support to access lessons and meet learning objectives,

We need to explore and provide alternative provisions and methods of differentiating and scaffolding for SEND, EAL and low-attaining children.

Intended Impact within your school context

~~The difference that this development will make to children's learning is all children will engage more deeply with science without barriers to writing hindering their progress and enjoyment of the subject.~~

The difference that this development will make to children's learning is that all children will be able to access their year group's science objectives at an attainment appropriate level for progress to be made and ultimately closing the attainment gap.

Operational Plan

CDA: To develop practice...by promoting inclusion and equity

The changes we are going to make are:

- Implement floor books in KS1 in Spring term
- Developing oracy in science
- Use of pictures/photographs/diagrams/videos etc as alternatives to writing
- Encourage children to have autonomy in science and select what they feel is the most appropriate way of recording.
- Using visual stimulus and prompts to support written tasks e.g. use of InPrint.

SSL1: To monitor and evaluate the change, we will gather evidence by:

- Book trawls before Christmas and end of Spring 2
- Photographs
- Floor books
- Pupil voice
- Staff voice
- Meeting with SLT and supporting head

SSL3: To implement the change, the CPD I need as subject leader is:

- Research alternative methods of recording
- Spotlight – adaptive teaching in primary science ✓ / SEND in mainstream science / The importance of oracy in science ✓
Deepening children's understanding of science through drama
- Researching new scheme of work for supporting stimulus

Who

When

SL
Staff
SLT

Autumn – looked at with pupils during Pupil voice
Spring 1 – SLT book scrutiny
Spring 2
Summer 2

SL

Spring 1
Adaptive 9.2
Oracy 9.2

SSL3: To implement the change, the CPD others will need is: • Feedback with methods of recording and guidance on expectations in staff meeting in Spring 1 • Revisit in summer term, taking feedback from staff as to what is working well and what is not • Spotlights (as above) • Training on new scheme – practical based, SEND alterations to worksheets etc.	SL staff	Spring 2 Summer 1
SSL2: To implement the change, we will need to engage with others by: • Removing writing as a method of recording when appropriate – i.e. for children with limited literacy skills, EAL, SEND. • All teachers will plan opportunities for children to record science in alternative ways e.g. through drawing diagrams, taking pictures, recording videos etc. • Children, particularly UKS2, will be encouraged to select appropriate ways to record their results. • Focus on one element of enquiry rather than all to allow focus to be on the practical task.	Staff TAs Children	Spring 2
SSL2: To evaluate and celebrate the impact of the change, we will: • Share good examples of recording – examples from floor books and pupils' work (clear diagrams, video explanations, photos) • Award merits for clear diagrams / oral explanations	SL Staff pupils	Spring 2 into summer

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Strategic Development Priority

CDB: To develop practice... through planned progression in content and procedural knowledge

Development priority within the context of your school

Because staff's understanding of procedural knowledge within our curriculum design is not consistent throughout school,

We need to improve our understanding of progression in science skills and knowledge about how scientists work.

Intended Impact within your school context

The difference that this development will make to children's learning is all children experience a curriculum that builds on prior learning and challenges them, more engagement in purposeful, practical work, better learning of procedural knowledge and promoting more positive attitudes towards science.

Operational Plan

CDB: To develop practice ... through planned progression in content and procedural knowledge

The changes we are going to make are:

- Set clear guidance on procedural knowledge – steps of science enquiry and how not all stages need to be completed every lesson. PURPOSEFUL
- Refresh bank of practical activities to include updates ideas – reshare
- Promote children's ideas for further enquiry and follow up by giving them opportunities to test their ideas
- ~~Implement TAPS assessments to identify misconceptions prior to end of unit~~
- Implement new scheme of work which support staff with progression of science skills and knowledge

	Who	When
SSL1: To monitor and evaluate the change, we will gather evidence by: • Book trawl • Staff voice • Lesson drop-ins • Inviting governors to observe science lessons	SL SLT governors	Autumn looked at with pupils during Pupil voice Spring 1 – SLT book scrutiny Spring Summer
SSL3: To implement the change, the CPD I need as subject leader is: • Research on VLE to find activities to support progression in procedural knowledge • Pocket: procedural knowledge progression / science enquiry types and working scientifically / Why? When? What next?	SL	Spring
SSL3: To implement the change, the CPD others will need is: • Staff meeting on procedural knowledge and setting of expectations / common misconceptions • Share ideas for practical activities taken from new scheme of work and previously made bank of practical activities in staff meeting • Invite staff to observe SL / staff members who are more confident in teaching practical activities during spring/ summer term.	SL staff	Spring 2 Summer 1

• TAPS assessment – review in staff meeting. • Spotlight : formative assessment strategies / planning with assessment in mind • Pocket: Reflecting on science teaching strategies • New science scheme: Plymouth Science implement Summer 1.		
SSL2: To implement the change, we will need to engage with others by: • Using purposeful practical activities as much as possible in science provided by new scheme of work and previously shared bank of practical activities • Linking lessons with prior learning and knowledge of the outside world • Employ science ambassadors for each class to support teachers with resources, tidying and practical tasks. Teachers to elect.	Staff	Spring 2 Summer 1
SSL2: To evaluate and celebrate the impact of the change, we will: • Feedback from staff via staff voice questionnaire and drop ins. • Pupil voice – taking small groups and discussing same questions as autumn questionnaire and sharing books with them, talking about what they have learnt/experienced in science. • Share responses from book trawls, drop ins and questionnaire activities with staff. • Employ science ambassadors – badges?	SL Staff pupils	Summer

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Strategic Development Priority

CDC: To develop practice...by connecting contexts and skills with other curriculum areas

Development priority within the context of your school

Because we do not always make links between different areas of the curriculum,
We need to make links explicit between science, maths and topic based work.

Intended Impact within your school context

The difference that this development will make to children's learning is they will become more independent in identifying where and how science links with other learning. They will also be able to link science to real-life context and experiences they have both in and out of school.

Operational Plan

CDC: To develop practice... by connecting contexts and skills with other curriculum areas

The changes we are going to make are:

- Show in planning any links that can be made
- Explicitly identify science in lessons outside of the subject to the children
- Encourage children to make links in their learning between maths and science through direct questioning, graphical/recording methods and analysing data.
- Half termly maths cross-curricular theme lesson, at least one of which much relate to science work.

	Who	When
SSL1: To monitor and evaluate the change, we will gather evidence by: • Pupil voice • Staff voice • Lesson drop-ins	SL Staff Pupils	Termly Drop ins Feb.
SSL3: To implement the change, the CPD I need as subject leader is: • How to encourage and develop connections between subjects – STEM primary science and maths skills • Meet with maths lead to discuss ways to develop a cross curricular approach	SL Maths lead	Spring 1
SSL3: To implement the change, the CPD others will need is: • Sharing of ideas how to promote links between subjects in staff meeting and update regularly via emails	SL staff	Spring 2
SSL2: To implement the change, we will need to engage with others by: • Encouraging small group / class discussions in science and maths. • Acknowledge and celebrate when children make the links themselves • Teachers explicitly plan and clearly identify the links	Staff Pupils	Spring 2 Summer

SSL2: To evaluate and celebrate the impact of the change, we will: • Compare how often children make links to maths in science at the beginning of the year to the end of the year – staff to make explicit links and reward children for making clear links. Feedback to SL whether there is an increase in links from children. • Children to independently make the connections that science and maths cross over.	Staff SL	Spring 2 Summer
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Teaching enables all children to learn science content and procedural knowledge

Strategic Development Priority

TLA: To develop practice...by encouraging children to ask questions and express ideas

Development priority within the context of your school

Because children lack curiosity and courage to ask good scientific questions,

We need to focus on improving understanding of what makes a good scientific question.

Intended Impact within your school context

The difference that this development will make to children's learning is they will become more confident learners and start to take risks with their learning. They will ask relevant and meaningful questions to deepen and further their conceptual knowledge and understanding. Some children will offer further lines of enquiry based on their questions.

Operational Plan

TLA: To develop practice... by encouraging children to ask questions and express ideas

The changes we are going to make are:

- Note key questions on planning
- Respond to children's discussions in lessons with further questioning
- Introduce 'science question of the week' – based on their learning to extend ideas and knowledge
- Partner talk / small group discussions
- Ask questions as next steps where appropriate – ensure these are responded to
- Implement stem sentences for responses
- Changing learning objectives to questions when enquiry-based work is going to follow
- [Have a real focus on British Science Week and the theme of curiosity links really well.](#)

	Who	When
SSL1: To monitor and evaluate the change, we will gather evidence by: • Recording good questions asked by children – could this be displayed on class science displays? • Conduct staff questionnaire to identify the sort of questions being asked • Pupil voice • Lesson drop-ins • Book trawls • Regularly updating and checking shared science display • Auditing resources currently being used by staff and sharing good practise – staff to act as champions for different resources e.g. Explorify • Evidencing British Science Week – noting key questions from children	Science Lead Staff/ children	Once per term Autumn 1 – books looked at with pupils during Pupil voice Spring 1 – SLT book scrutiny Drop ins Feb. Each lesson
SSL3: To implement the change, the CPD I need as subject leader is: • Research ways of encouraging questioning and developing high order thinking e.g. Pocket Monitoring Question Capture	Science Lead	Research – Autumn term

Developing stem sentences for questions, ensuring they are open ended and relevant, using words like how... what... does... e.g. Does the colour of the flower affect which insects visit it? New science scheme supports this. (√ Implement March)		
SSL3: To implement the change, the CPD others will need is: - Examples of questions to model to children - Bank of key questions to use alongside planning for each unit of work - Strategies for encouraging questioning e.g., Concept cartoons / videos / make use of Explorify resources etc. New science scheme supports this. (√ Implement March) Bank of resources curated to support planning for British Science week (√Feb)	Science Lead/ teachers	Spring term
SSL2: To implement the change, we will need to engage with others by: - Asking children to identify what they think was the most thought-provoking question asked by another child each lesson using the guidelines of what makes a good question e.g., open ended, using the stem structure. - Questions focus on observable phenomena rather than the abstract, although more able children will be challenged with more abstract questions - Following up on children's ideas for further lines of enquiry based on their questions - Making questioning the focus of the half termly science award. Staff will be told this is the focus as will the children (end of Spring 2) Focus on questioning during British Science Week	Teachers Pupils	Spring
SSL2: To evaluate and celebrate the impact of the change, we will: - Reward children for using open ended questions and the stem sentences - Pupil voice – can children ask further questions based on what they have learnt?	SL Teachers Pupils	Summer term

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Strategic Development Priority

TLB: To develop practice...by using approaches and resources that enable lesson outcomes to be met

Development priority within the context of your school

Because teachers have access to limited resources and superfluous schemes of learning,

We need to provide children with a wider range of learning approaches and practical tasks through a uniform planning approach.

Intended Impact within your school context

The difference that this development will make to children's learning is they will have access to a wider range of purposeful practical activities that further their substantive and procedural knowledge using appropriate resources and staff will have a single clear scheme of learning to follow.

Operational Plan

TLB: To develop practice... by using approaches and resources that enable lesson outcomes to be met

The changes we are going to make are:

- Audit resources
- Prioritise purchase of new resources according to need
- Use resources beyond usual schemes of work – to be shared with staff
- Create bank of practical activities to be shared with staff
- Implement a new scheme of learning once approved by acting head and office manager
- Focus lessons on specific procedural elements – use of a key to identify which across the school so children are famili

	Who	When
SSL1: To monitor and evaluate the change, we will gather evidence by: • Pupil voice • Staff voice / discussions with staff • Book trawl • Lesson drop-ins	SL	Autumn- looked at with pupils during Pupil voice Spring 1 – SLT book scrutiny Drop ins Feb
SSL3: To implement the change, the CPD I need as subject leader is? • Research schemes of learning in primary science – online research and discussions with other schools – Autumn term. • Seek advice from other SL in the area to evaluate what they use New scheme identified and purchased February. Science lead to use for Spring 2, give training on during staff meeting and all staff to use from summer 1 onwards. • Use new scheme Spring 2 to understand how it works prior to whole school roll-out.	SL and other local SLs Head from Lapworth (Autumn 2)	Autumn 2 Scheme purchased Spring 1.
SSL3: To implement the change, the CPD others will need is: • Staff meeting on procedural knowledge and setting of expectations / common misconceptions • Spotlight: What is the difference between content and procedural knowledge? • Staff meeting to share alternatives for lesson ideas e.g. Ogden / Explorify etc. and how to use these resources • Training on new scheme of learning in Spring term, once purchased. (11.3.26)	SL staff	Spring 2

•		
SSL2: To implement the change, we will need to engage with others by: Implement new scheme of learning which is practical based – Spring Summer 1 for whole school.	SL Staff pupils	Summer 1 Spring
SSL2: To evaluate and celebrate the impact of the change, we will: - Pupil voice – feedback of new scheme - Staff voice – feedback on new scheme. What is working well? What needs further development?	SL Staff pupils	Summer 2

Teaching enables all children to learn science content and procedural knowledge

Strategic Development Priority

TLC: To develop practice...informed by formative and summative assessment

Development priority within the context of your school	Intended Impact within your school context
Because addressing misconceptions in science is not consistent throughout the school, We need to ensure teachers are secure with their knowledge of key objectives and misconceptions are addressed timely.	The difference that this development will make to children's learning is that teachers will be able to adapt their lessons to address misconceptions in a timely manner and prevent further gaps and misunderstandings in children's conceptual and procedural knowledge.

Operational Plan

TLC: To develop practice... informed by formative and summative assessment

The changes we are going to make are:

- Implement TAPS assessments to identify misconceptions prior to end of unit
- Monitor assessment results more closely to identify key areas of need and misconceptions to address in a more timely manner

	Who	When
SSL1: To monitor and evaluate the change, we will gather evidence by: • Book trawl • Discussions with pupils	SL staff	Autumn - looked at with pupils during Pupil voice Spring 1 – SLT book scrutiny
SSL3: To implement the change, the CPD I need as subject leader is: • Refresh on TAPS assessments • New scheme provides assessment opportunities and exemplar. • Pocket: assessment, planning and monitoring / Principles of assessment	SL	Spring
SSL3: To implement the change, the CPD others will need is: • Staff meeting on TAPS assessments • Pocket (as above) • Training on new scheme	SL staff	Spring
SSL2: To implement the change, we will need to engage with others by: • Supporting staff with new assessments by providing planned activities to ease workload	SL staff	Spring / Summer
SSL2: To evaluate and celebrate the impact of the change, we will: • Share progress in knowledge through pupil voice, book trawls, discussions. • Summer 2 science award to be based on progress in science across the year	SL Staff pupils	Summer

PSQM OUTREACH ONLY

CD: The science curriculum engages, inspires and challenges all children

Strategic Development Priority

Development priority beyond the context of your own school

Because

We need to

Intended impact beyond your school context

The difference that this development will make to children's learning...

Operational Plan

The changes we are going to make are:

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Who

When

SSL1: To monitor and evaluate the change, we will gather evidence by:

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SSL3: To implement the change, the CPD I need as subject leader is:

-

SSL3: To implement the change, the CPD others will need is:

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SSL2: To implement the change, we will need to engage with others by:

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SSL2: To evaluate and celebrate the impact of the change, we will:

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PSQM OUTREACH ONLY

TL: Teaching enables all children to learn science content and procedural knowledge

Strategic Development Priority

Development priority beyond the context of your own school

Because

We need to

Intended impact beyond your school context

The difference that this development will make to children's learning...

Operational Plan

The changes we are going to make are:

-

SSL1: To monitor and evaluate the change, we will gather evidence by:

-

SSL3: To implement the change, the CPD I need as subject leader is:

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SSL3: To implement the change, the CPD others will need is:

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SSL2: To implement the change, we will need to engage with others by:

-

SSL2: To evaluate and celebrate the impact of the change, we will:

-

Who

When