

MAYOR OF LONDON

Plan now. Assess later?

Naomi Hiscock

Director, Primary Science Education Consultancy

naomi@primary-science.co.uk

Sign up for my regular newsletter [here](#)

Aims

The session will focus on:

- what needs to be assessed and what doesn't
- how to build assessment into planning
- how to use assessment to refine and revise future plans
- resources that explain the National Curriculum (England) outcomes
- resources that support formative and summative assessment.

Why assess science?

- Who is it for?
- What function does it serve?
- What is the impact?

Who is science assessment for?

- Pupils
- Teachers
- Future teachers
- Subject leaders
- Senior leadership
- Governors
- Parents
- Government

What is the function of assessment?

- Pupils
- Teachers
- Future teachers
- Subject leaders
- Senior leadership
- Governors
- Parents
- Government

What is the impact of assessment?

- Pupils
- Teachers
- Future teachers
- Subject leaders
- Senior leadership
- Governors
- Parents
- Government

Statutory assessment

- End of KS1 and KS2 against the teacher assessment framework.
- Is assessment only needed in year 2 and 6?

Teacher assessment framework

name, locate and describe the functions of the main parts of the digestive [Y4], musculoskeletal [Y3], and circulatory systems [Y6], and describe and compare different reproductive processes and life cycles, in animals [Y5].

View from Ofsted

‘The best teaching was informed by accurate and timely assessment of how well pupils were developing their understanding of science concepts, and their skills in analysis and interpretation so that teaching could respond to and extend pupils’ learning.’

from “Maintaining Curiosity in Science”

Published November 2013

A triennial report based on science inspections of around 90 primary schools.

Uses of assessment in the school

National Performance

- Sample testing of groups of pupils

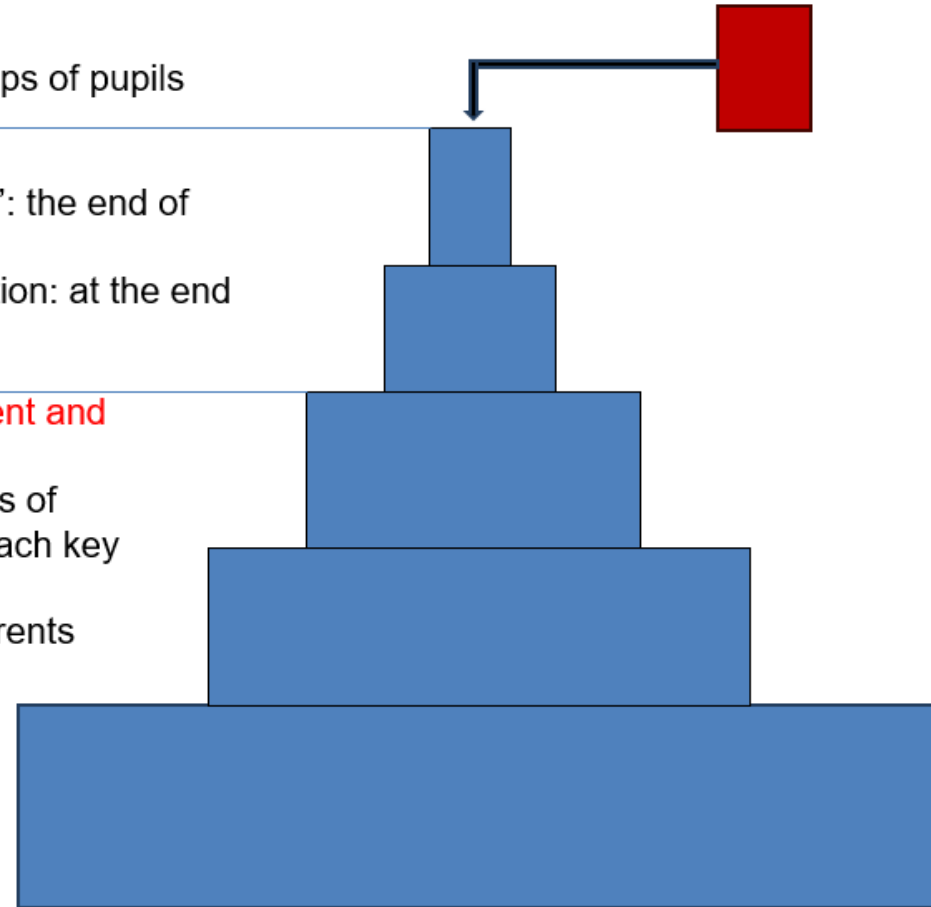
Class and school records

- School 'Annual Report': the end of Upper Key Stage 2
- Internal school evaluation: at the end of each key stage

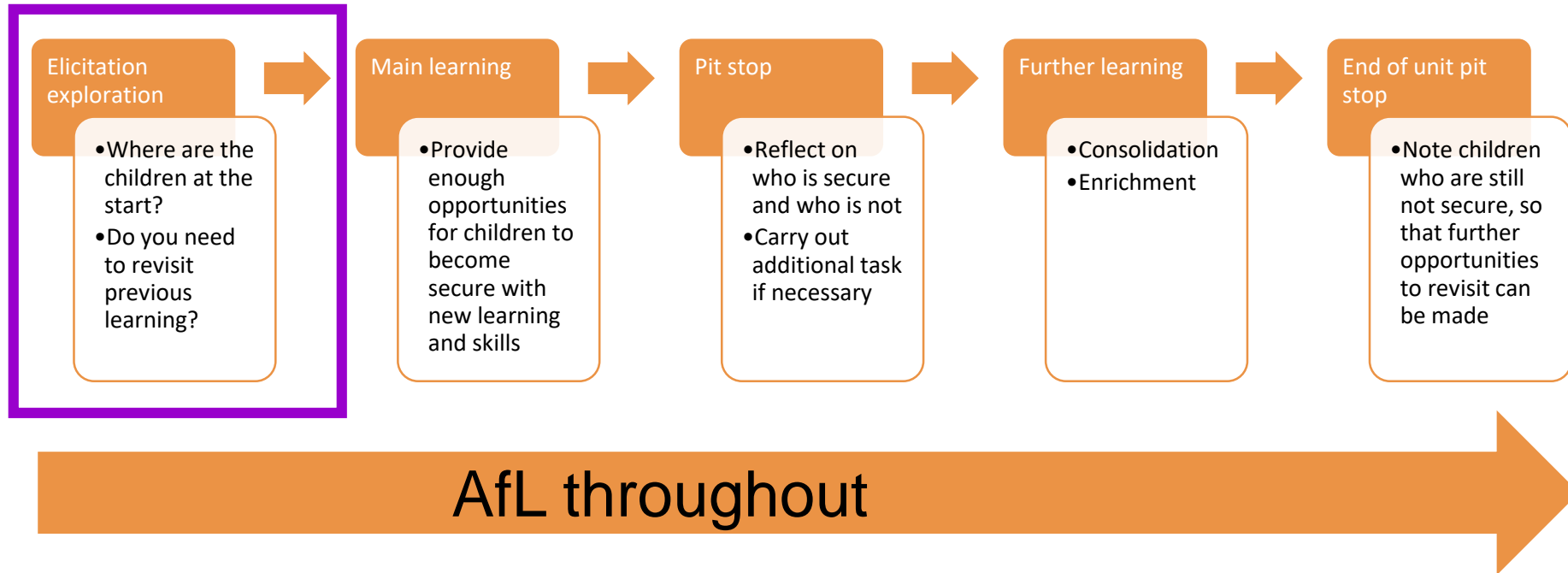
Individual pupil assessment and records

- Summative judgements of progress of pupils at each key stage
- Annual reporting to parents

On-going formative assessment



PLAN Knowledge matrices



PLAN Knowledge matrices

Plants (Y1)

[Download Y1 matrices](#)

[Download examples](#)

Prior learning

- Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes. (Early Learning Goal)

Future learning

- Observe and describe how seeds and bulbs grow into mature plants. (Y2 - Plants)
- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. (Y2 - Plants)
- Identify and name a variety of plants and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats)
- Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. (Y3 - Plants)
- Investigate the way in which water is transported within plants. (Y3 Plants)

Year

1

Topic

Plants

- Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.
- Identify and describe the basic structure of a variety of common flowering plants, including trees.



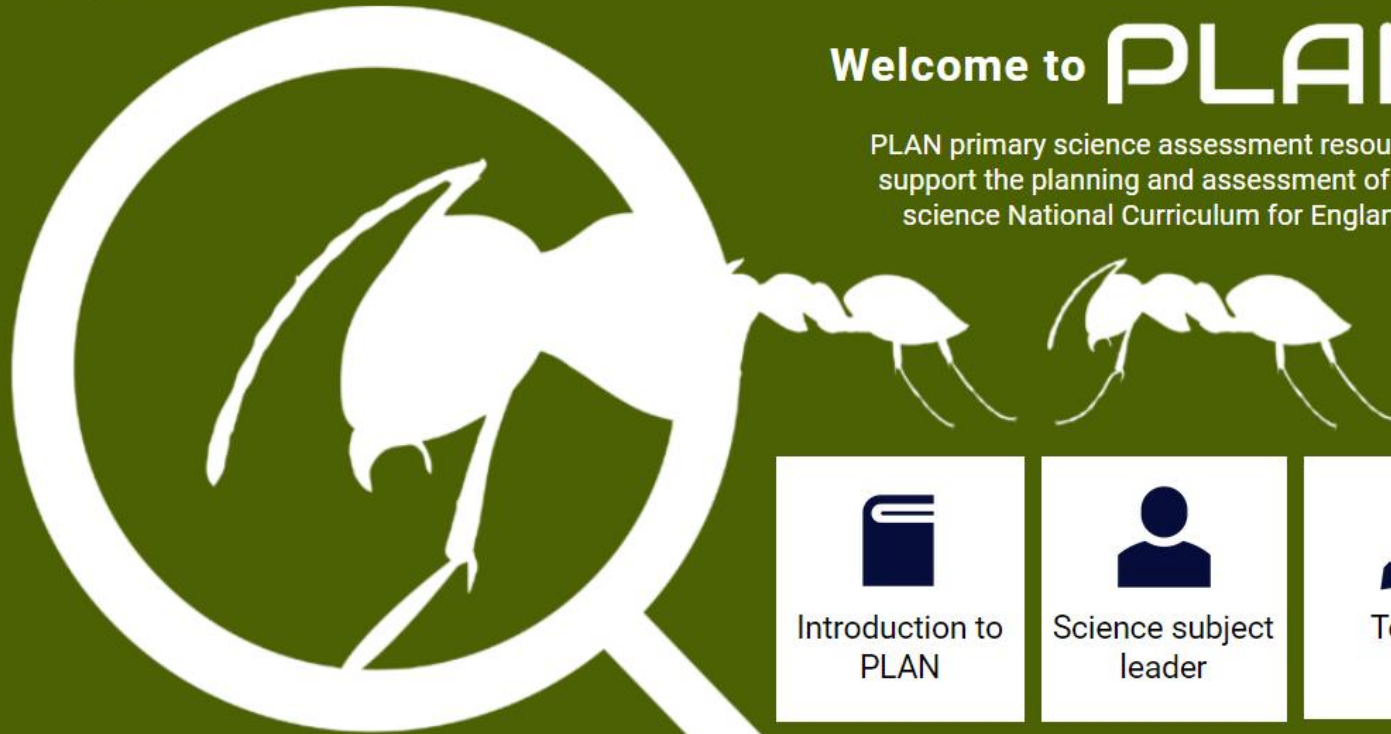
HOME

SUBJECT LEADER

TEACHER

RESOURCES

MORE



Welcome to PLAN

PLAN primary science assessment resources support the planning and assessment of the science National Curriculum for England



Introduction to
PLAN



Science subject
leader




Teacher

www.planassessment.com

Teacher

The PLAN assessment resources include a range of resources that are designed to support teachers to implement effective and robust assessment systems. The resources for teachers are set out below.

If you are not familiar with the PLAN assessment resources and how they support the planning and assessment of science, you may want to read our [Introduction to PLAN](#).

Year	1	Topic	Plants			
	<ul style="list-style-type: none"> Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees. 					
	<p>WHAT PUPILS NEED TO KNOW OR DO TO BE SECURE Show understanding of a concept using scientific vocabulary correctly</p> <table border="1"> <thead> <tr> <th>Key learning</th> <th>Possible evidence</th> </tr> </thead> <tbody> <tr> <td> <p>Growing locally, there will be a vast array of plants which all have specific names. These can be identified by looking at the key characteristics of the plant. Plants have common parts, but they vary between the different types of plants. Some trees keep their leaves all year while other trees drop their leaves during autumn and grow them again during spring.</p> <p>Key vocabulary Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees in the local area Names of garden and wild flowering plants in the local area</p> </td> <td> <ul style="list-style-type: none"> Can name trees and other plants that they see regularly Can describe some of the key features of these trees and plants e.g. the shape of the leaves, the colour of the flower/blossom Can point out trees which lost their leaves and those that kept them the whole year Can point to and name the parts of a plant, recognising that they are not always the same e.g. leaves and stems may not be green </td> </tr> </tbody> </table> <p>Common misconceptions</p> <p>Some children may think:</p> <ul style="list-style-type: none"> plants are flowering plants grown in pots with colored petals and leaves and a stem trees are not plants all leaves are green all stems are green a trunk is not a stem blossom is not a flower. 			Key learning	Possible evidence	<p>Growing locally, there will be a vast array of plants which all have specific names. These can be identified by looking at the key characteristics of the plant. Plants have common parts, but they vary between the different types of plants. Some trees keep their leaves all year while other trees drop their leaves during autumn and grow them again during spring.</p> <p>Key vocabulary Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees in the local area Names of garden and wild flowering plants in the local area</p>
Key learning	Possible evidence					
<p>Growing locally, there will be a vast array of plants which all have specific names. These can be identified by looking at the key characteristics of the plant. Plants have common parts, but they vary between the different types of plants. Some trees keep their leaves all year while other trees drop their leaves during autumn and grow them again during spring.</p> <p>Key vocabulary Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees in the local area Names of garden and wild flowering plants in the local area</p>	<ul style="list-style-type: none"> Can name trees and other plants that they see regularly Can describe some of the key features of these trees and plants e.g. the shape of the leaves, the colour of the flower/blossom Can point out trees which lost their leaves and those that kept them the whole year Can point to and name the parts of a plant, recognising that they are not always the same e.g. leaves and stems may not be green 					
<p>Apply knowledge in familiar related contexts, including a range of enquiries</p> <table border="1"> <thead> <tr> <th>Activities</th> <th>Possible evidence</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> Make close observations of leaves, seeds, flowers etc. Compare two leaves, seeds, flowers etc. Classify leaves, seeds, flowers etc. using a range of characteristics. Identify plants by matching them to named images. Make observations of how plants change over a period of time. </td> <td> <ul style="list-style-type: none"> Can sort and group parts of plants using similarities and differences Can use simple charts etc. to identify plants Can collect information on features that change during the year </td> </tr> </tbody> </table>			Activities	Possible evidence	<ul style="list-style-type: none"> Make close observations of leaves, seeds, flowers etc. Compare two leaves, seeds, flowers etc. Classify leaves, seeds, flowers etc. using a range of characteristics. Identify plants by matching them to named images. Make observations of how plants change over a period of time. 	<ul style="list-style-type: none"> Can sort and group parts of plants using similarities and differences Can use simple charts etc. to identify plants Can collect information on features that change during the year
Activities	Possible evidence					
<ul style="list-style-type: none"> Make close observations of leaves, seeds, flowers etc. Compare two leaves, seeds, flowers etc. Classify leaves, seeds, flowers etc. using a range of characteristics. Identify plants by matching them to named images. Make observations of how plants change over a period of time. 	<ul style="list-style-type: none"> Can sort and group parts of plants using similarities and differences Can use simple charts etc. to identify plants Can collect information on features that change during the year 					

PLAN Knowledge matrices

These documents will enable you to have a clear understanding of the expectations of the science National Curriculum in England.

[VIEW MORE](#)

PLAN Knowledge matrices

There is a matrix for each topic in each year of the science National Curriculum. Each matrix provides:

- the key learning and vocabulary that the children need to have acquired
- examples of possible activities that enable pupils to learn or apply the knowledge
- examples of possible evidence that would indicate that children are secure in the learning and vocabulary.

Where appropriate, common misconceptions that the children may have are included to alert you to be aware of these.

When children have engaged in sufficient activities to have become secure in the required knowledge, it is time to reflect on their learning. Children that are not secure can then be given additional activities to provide them with further opportunities to show that they are secure, possibly gathering evidence in a different way, for example verbally in a small group context. Children that are secure can be given enrichment activities to broaden their thinking, while being careful not to stray into the content taught in later years.

To access the matrix for a particular topic for a particular year group, click on the topic in the table below.

Year	Topic	Topic	Topic	Topic	Topic
1	Plants	Animals, including humans	Everyday materials	Seasonal changes	
2	Living things and their habitats	Plants	Animals, including humans	Uses of everyday materials	
3	Plants	Animals, including humans	Rocks	Light	Forces and magnets
4	Living things and their habitats	Animals, including humans	States of matter	Sound	Electricity
5	Living things and their habitats	Animals, including humans	Properties and changes of materials	Earth and space	Forces
6	Living things and their habitats	Animals, including humans	Evolution and inheritance	Light	Electricity

Resources to support with elicitation

The screenshot shows the Explorify website interface. At the top, there is a navigation bar with the Explorify logo, a search icon, and links for 'Activities', 'My dashboard', 'Downloads', 'Blog', and a user profile 'Naomi'. Below the navigation bar is a main heading: 'Help your class think like scientists!' with a subtext: 'Use these short anytime activities to develop critical thinking skills.' Below this is a search and filter bar with a search input field and dropdown menus for 'Science topic (all)', 'Year group (all)', 'Activity type (all)', and 'Advanced (all)'. The main content area displays four activity cards, each with a 'New' badge in the top right corner. Each card includes a title, a brief description, an age range, and a list of topics. At the bottom of each card are 'Save' and 'Mark as done?' buttons.

Explorify Activities My dashboard Downloads Blog Naomi

★ Help your class think like scientists!
Use these short anytime activities to develop critical thinking skills.

Search for activities Science topic (all) Year group (all) Activity type (all) Advanced (all)

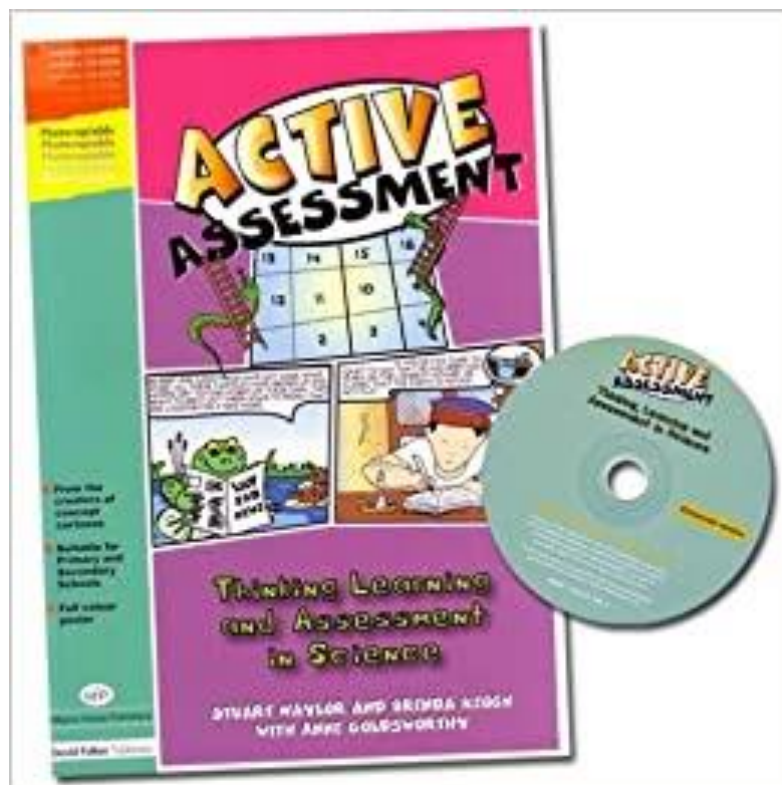
Can microorganisms be good for you?
Plan a fun investigation and get your class thinking about microorganisms.
Ages 9 – 11
• Living things and their habitats

How clean are your hands?
Plan a fun investigation and get your class thinking about personal hygiene.
Ages 5 – 7
• Animals, including humans

Small but powerful
Put your class' observation skills to the test with these three microorganisms.
Ages 9 – 11
• Living things and their habitats

Garden blades
Take a closer look at this everyday object by zooming in and out to see it differently.
Ages 9 – 11
• Living things and their habitats
• Evolution and inheritance

Resources to support with elicitation



EXPLORE, ENGAGE, EXTEND

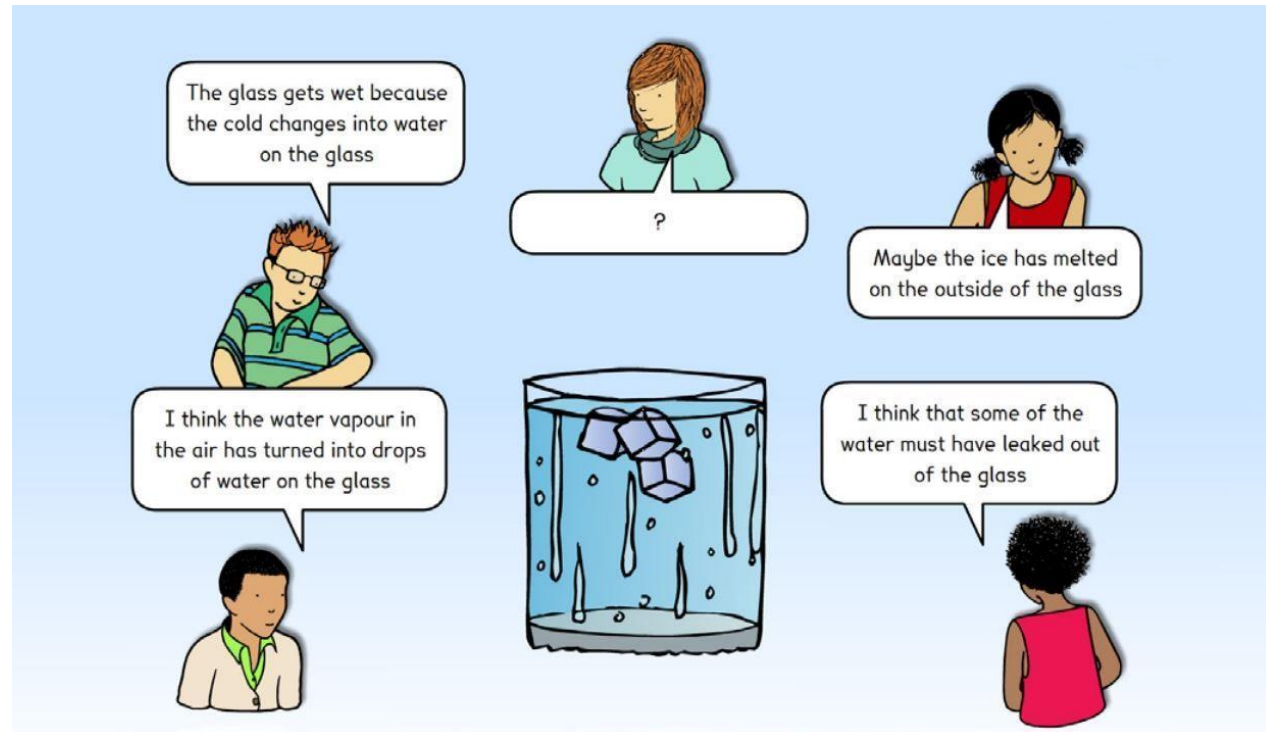
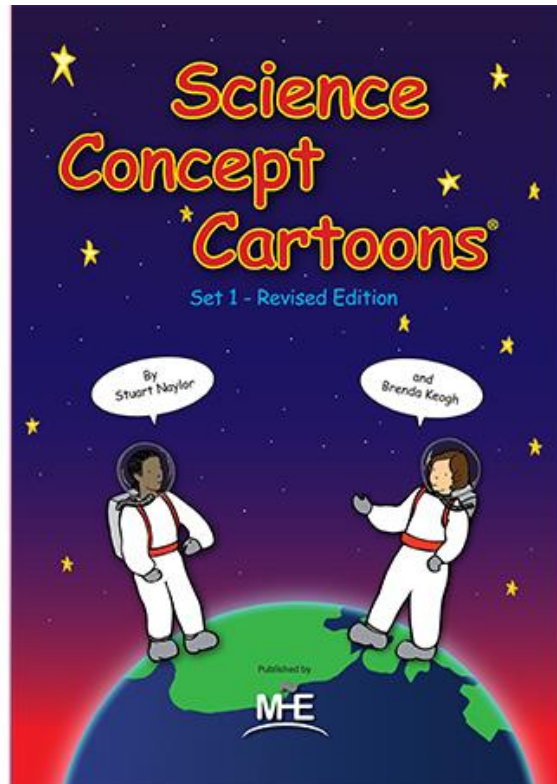
Eliciting children's knowledge and understanding in science to inform the planning of new learning experiences



TRACY TYRRELL

A Primary Science Teaching Trust Resource

Concept cartoons



On the chat

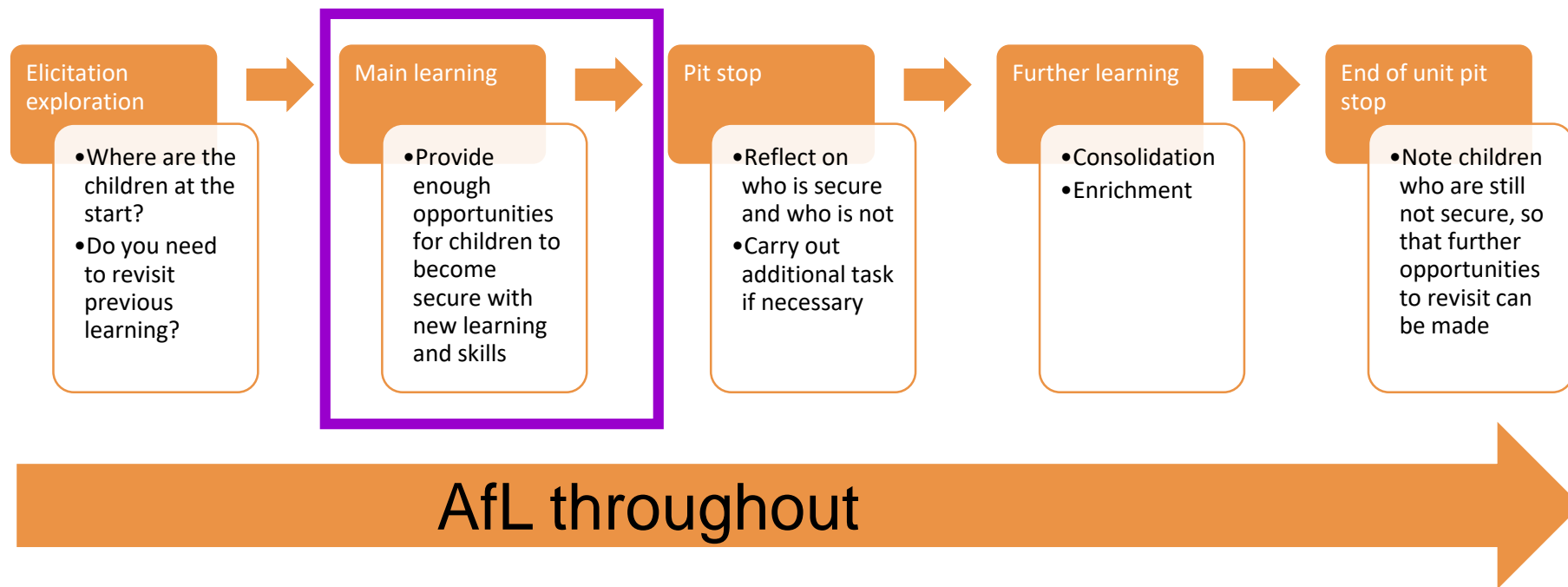
- What strategies do you use to find out about your pupils' prior learning?

Ofsted framework

“The school’s curriculum is planned and sequenced so that new knowledge and skills **build on what has been taught** before and towards its **clearly defined end points**.”

School inspection handbook: Handbook for inspecting schools in England under section 5 of the Education Act 2005, p.41, Ofsted November 2019

PLAN Knowledge matrices



Clarity in the National Curriculum

<ul style="list-style-type: none">• compare and group together everyday materials on the basis of their properties <p>A</p>	<ul style="list-style-type: none">• identify and compare the suitability of a variety of everyday materials, <p>B</p>
<ul style="list-style-type: none">• give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday material <p>C</p>	<ul style="list-style-type: none">• compare and group together a variety of everyday materials on the basis of their simple physical properties. <p>D</p>

Are these statements from year 1, 2 or 5?

On the chat, don't submit until I ask you to.

Y1 =

Y2 =

Y5 =

Clarity in the National Curriculum

<ul style="list-style-type: none">• compare and group together everyday materials on the basis of their properties <p>5</p>	<ul style="list-style-type: none">• identify and compare the suitability of a variety of everyday materials <p>2</p>
<ul style="list-style-type: none">• give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday material <p>5</p>	<ul style="list-style-type: none">• compare and group together a variety of everyday materials on the basis of their simple physical properties. <p>1</p>

PLAN Knowledge matrices

Key learning

All objects are made of one or more materials. Some objects can be made from different materials e.g. plastic, metal or wooden spoons.

Materials can be described by their properties e.g. shiny, stretchy, rough etc. Some materials e.g. plastic can be in different forms with very different properties.

Year 1

Key learning

All objects are made of one or more materials that are chosen specifically because they have suitable properties for the task. For example, a water bottle is made of plastic because it is transparent allowing you to see the drink inside and waterproof so that it holds the water. When choosing what to make an object from, the properties needed are compared with the properties of the possible materials, identified through simple tests and classifying activities. A material can be suitable for different purposes and an object can be made of different materials.

Year 2

Key learning

Materials have different uses depending on their properties and state (liquid, solid, gas). Properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets. Some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment.

Year 5

Scientific knowledge and conceptual understanding

While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. **Insecure, superficial understanding will not allow genuine progression:** pupils may struggle at key points of transition (such as between primary and secondary school), build up **serious misconceptions**, and/or have **significant difficulties in understanding higher-order content**.

WHAT PUPILS NEED TO KNOW OR DO TO BE SECURE**Show understanding of a concept using scientific vocabulary correctly**

Key learning	Possible evidence
Growing locally, there will be a vast array of plants which all have specific names. These can be identified by looking at the key characteristics of the plant. Plants have common parts, but they vary between the different types of plants. Some trees keep their leaves all year while other trees drop their leaves during autumn and grow them again during spring.	<ul style="list-style-type: none"> • Can name trees and other plants that they see regularly • Can describe some of the key features of these trees and plants e.g. the shape of the leaves, the colour of the flower/blossom • Can point out trees which lost their leaves and those that kept them the whole year • Can point to and name the parts of a plant, recognising that they are not always the same
Key vocabulary	
Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees in the local area Names of garden and wild flowering plants in the local area	

Common misconceptions

Some children may think:

- plants are flowering plants grown in pots with colored petals and leaves and a stem
- trees are not plants
- all leaves are green
- all stems are green
- a trunk is not a stem
- blossom is not a flower.

Apply knowledge in familiar related contexts, including a range of enquiries

Activities	Possible evidence
<ul style="list-style-type: none"> • Make close observations of leaves, seeds, flowers etc. • Compare two leaves, seeds, flowers etc. • Classify leaves, seeds, flowers etc. using a range of characteristics. • Identify plants by matching them to named images. • Make observations of how plants change over a period of time. • When further afield, spot plants that are the same as those in the local area studied regularly, describing the key features that helped them. 	<ul style="list-style-type: none"> • Can sort and group parts of plants using similarities and differences • Can use simple charts etc. to identify plants • Can collect information on features that change during the year • Can use photographs to talk about how plants change over time

Ofsted framework

“The school’s curriculum is planned and sequenced so that new knowledge and **skills** build on what has been taught before and towards its **clearly defined end points**.”

School inspection handbook: Handbook for inspecting schools in England under section 5 of the Education Act 2005, p.41, Ofsted November 2019

PLAN working scientifically matrices



Working scientifically skills Year 1 & 2

Asking simple questions and recognising that they can be answered in different ways

- While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions.
- The children answer questions developed with the teacher often through a scenario.
- The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered.

Observing closely, using simple equipment

- Children explore the world around them. They make careful observations to support identification, comparison and noticing change. They use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations.
- They begin to take measurements, initially by comparisons, then using non-standard units.

Performing simple tests

- The children use practical resources provided to gather evidence to answer questions generated by themselves or the teacher. They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time.

Identifying and classifying

- Children use their observations and testing to compare objects, materials and living things. They sort and group these things, identifying their own criteria for sorting.
- They use simple secondary sources (such as identification sheets) to name living things. They describe the characteristics they used to identify a living thing.



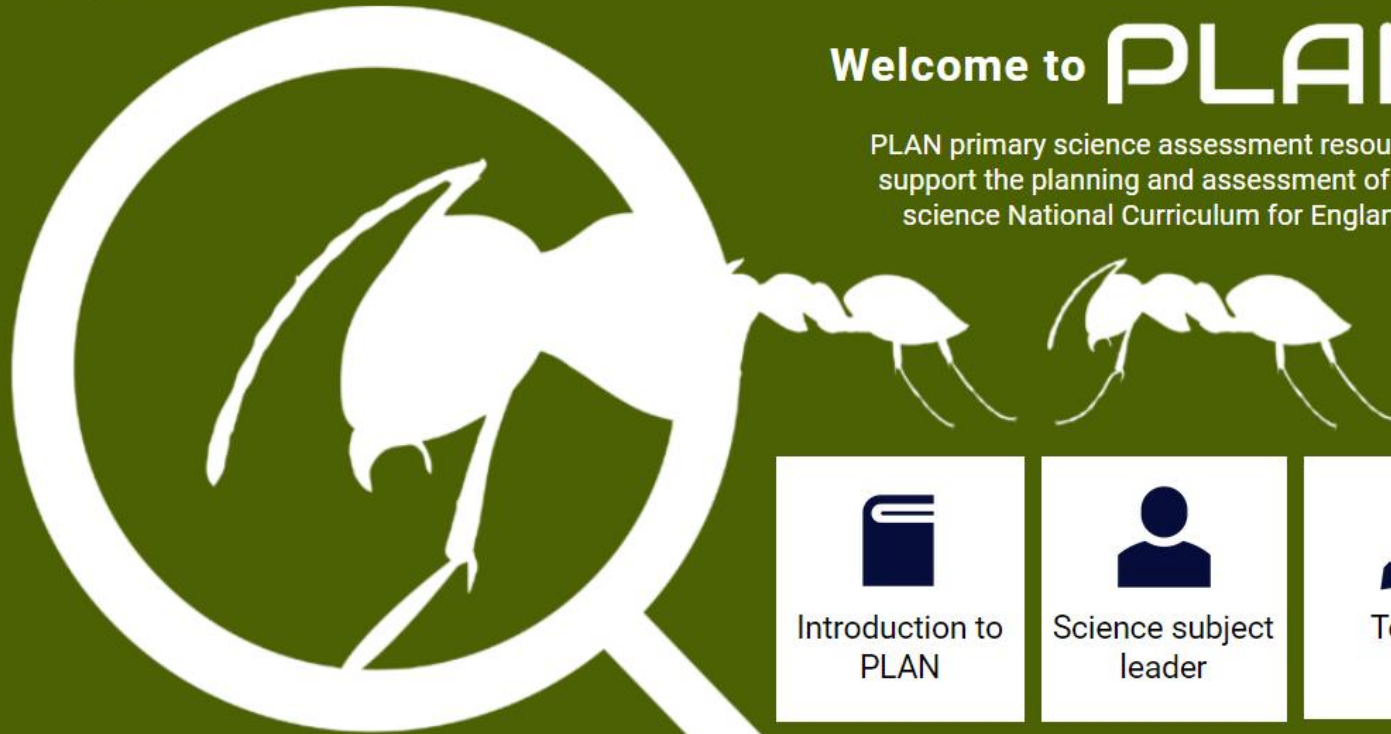
HOME

SUBJECT LEADER

TEACHER

RESOURCES

MORE



Welcome to PLAN

PLAN primary science assessment resources support the planning and assessment of the science National Curriculum for England



Introduction to
PLAN



Science subject
leader




Teacher

www.planassessment.com



PLAN working scientifically matrices



**Working scientifically skills
Year 5 & 6**

Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

- Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry.
- Given a wide range of resources the children decide for themselves how to gather evidence to answer a scientific question. They choose a type of enquiry to carry out and justify their choice. They recognise how secondary sources can be used to answer questions that cannot be answered through practical work.
- The children select from a range of practical resources to gather evidence to answer their questions. They carry out fair tests, recognising and controlling variables. They decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample.

Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate

- The children select measuring equipment to give the most precise results e.g. ruler, tape measure or trundle wheel, force meter with a suitable scale.
- During an enquiry, they make decisions e.g. whether they need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order to get accurate data (closer to the true value).

© PLAN September 2019 1

PLAN Working scientifically matrices

These documents provide additional guidance that clarifies the working scientifically statements from the science National Curriculum for England.

[DOWNLOAD](#)

PLAN working scientifically matrices



Progression in working scientifically skills

NB - The National Curriculum statements in italics in these tables indicate that they feature more than once.

Year 1 & 2	Year 3 & 4	Year 5 & 6
Asking questions and recognising that they can be answered in different ways		
<p>Asking simple questions and recognising that they can be answered in different ways</p> <ul style="list-style-type: none"> While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions. The children answer questions developed with the teacher often through a scenario. The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered. 	<p>Asking relevant questions and using different types of scientific enquiries to answer them</p> <ul style="list-style-type: none"> The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions. The children answer questions posed by the teacher. Given a range of resources, the children decide for themselves how to gather evidence to answer the question. They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. They identify the type of enquiry that they have chosen to answer their question. 	<p><i>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</i></p> <ul style="list-style-type: none"> Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry. Given a wide range of resources the children decide for themselves how to gather evidence to answer a scientific question. They choose a type of enquiry to carry out and justify their choice. They recognise how secondary sources can be used to answer questions that cannot be answered through practical work.



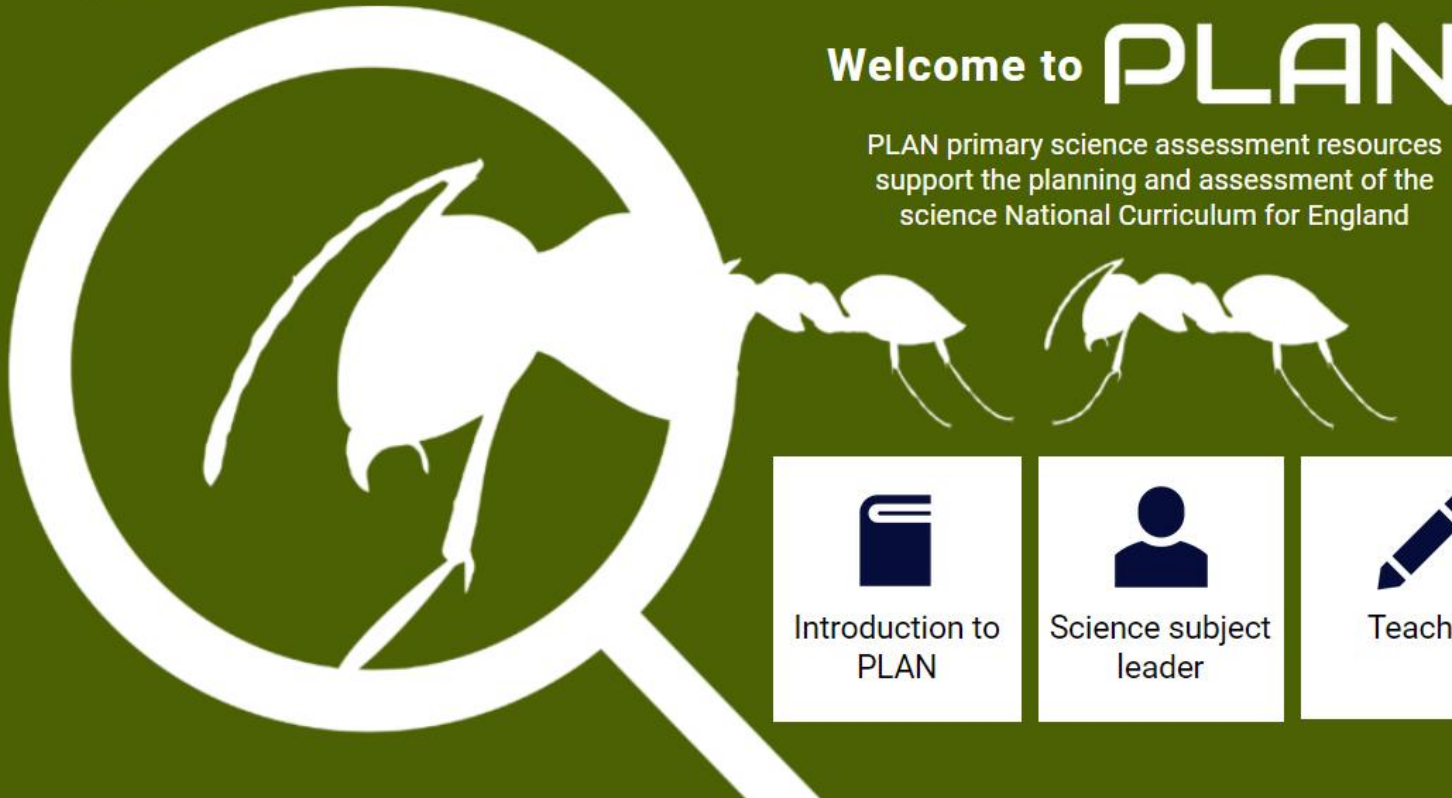
HOME

SUBJECT LEADER

TEACHER

RESOURCES

MORE



Welcome to PLAN

PLAN primary science assessment resources support the planning and assessment of the science National Curriculum for England



Introduction to
PLAN



Science subject
leader



Teacher

www.planassessment.com

Evidence of learning

PLAN knowledge matrices

WHAT PUPILS NEED TO KNOW OR DO TO BE SECURE	
Show understanding of a concept using scientific vocabulary correctly	
Key learning	Possible evidence
Growing locally, there will be a vast array of plants which all have specific names. These can be identified by looking at the key characteristics of the plant. Plants have common parts, but they vary between the different types of plants. Some trees keep their leaves all year while other trees drop their leaves during autumn and grow them again during spring.	<ul style="list-style-type: none"> • Can name trees and other plants that they see regularly • Can describe some of the key features of these trees and plants e.g. the shape of the leaves, the colour of the flower/blossom • Can point out trees which lost their leaves and those that kept them the whole year • Can point to and name the parts of a plant, recognising that they are not always the same e.g. leaves and stems may not be green
Key vocabulary	
Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees in the local area Names of garden and wild flowering plants in the local area	
Common misconceptions	
Some children may think: <ul style="list-style-type: none"> • plants are flowering plants grown in pots with colored petals and leaves and a stem • trees are not plants • all leaves are green • all stems are green • a trunk is not a stem • blossom is not a flower. 	
Apply knowledge in familiar related contexts, including a range of enquiries	
Activities	Possible evidence
<ul style="list-style-type: none"> • Make close observations of leaves, seeds, flowers etc. • Compare two leaves, seeds, flowers etc. • Classify leaves, seeds, flowers etc. using a range of characteristics. • Identify plants by matching them to named images. • Make observations of how plants change over a period of time. • When further afield, spot plants that are the same as those in the local area studied regularly, describing the key features that helped them. 	<ul style="list-style-type: none"> • Can sort and group parts of plants using similarities and differences • Can use simple charts etc. to identify plants • Can collect information on features that change during the year • Can use photographs to talk about how plants change over time

PLAN Examples of work



PLAN Primary Science – Supporting Assessment

Properties and changes of Materials Year 5-Diogjena

 **The Association
for Science Education**
Promoting Excellence In Science Teaching and Learning

© Pan London Assessment Network (PLAN) July 2019
This resource has been developed by the Pan London Assessment Network and is supported by the Association for Science Education.

PLAN Examples of work

Interpreting results from a fair test

- know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution

Each group was then given time to complete their chosen investigation and asked to interpret their results.

Diogjena was able to carry out the investigation controlling variables appropriately. She drew her own table to record her results and was able to interpret these, including using the results to make further predictions.

Temperature of water	Observations
20°C	it dissolved quickly.
52°C	It dissolved quicker than before.
10°C	It didn't really dissolve properly.

This piece of writing shows that Diogjena is confidently using the key vocabulary 'dissolve'. She has not however linked her observations to her subject knowledge to explain why the hotter water caused the sugar to dissolve more quickly.

We found out that the hotter the water the quicker it dissolves.

I know this because when we did the cold water which was 10°C it didn't really dissolve but when I put the hot water which was 52°C it dissolved quicker.

I think if we had even hotter water it would dissolve even quicker and if we had even colder water it would dissolve even slower.

Investigating thermal insulation

- give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
- compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets

The children were asked to set up an investigation to explore how well different types of cups would keep a drink warm.

Material of Cup	Initially	2 minutes	4 minutes	6 minutes	8 minutes	10 min	12 min
Polystyrene	31°	31°	31°	30°	29°	28°	28°
plastic	29°	29°	28°	26°	25.9°	25°	25°
ceramic cup	29°	29°	26.5°	24°	23.4	23.6°	23.5°

Diogjena's group decided to record the temperature in each cup every two minutes. He recorded her results in a table.

The water in the plastic cup and the ceramic cup was at 29°C, but it cooled more in the ceramic cup showing this is not such a good thermal insulator. The water in the plastic cup and the polystyrene cup was at a different temperature to start with and the temperature change was quite similar, so it is difficult to compare how good they are as thermal insulators.

Diogjena uses the word thermal insulator correctly when interpreting her results.

PLAN Examples of work

PLAN
Planning for assessment

HOME SUBJECT LEADER TEACHER **RESOURCES** MORE

Resources

Filter by

Collection

- All
- Knowledge
- Working scientifically
- CPD
- Knowledge matrices
- Working scientifically matrices
- Examples of work - Year 1**
- Examples of work - Year 2
- Examples of work - Year 3
- Examples of work - Year 4
- Examples of work - Year 5
- Examples of work - Year 6

New & For Sale

Working scientifically planning coverage CPD: Coverage Sheet

New & For Sale

Working scientifically planning coverage CPD (KS1)
£20.00

New & For Sale

Working scientifically planning coverage CPD (KS2)
£40.00

New & For Sale

Working scientifically planning coverage CPD (KS1 & KS2)
£50.00

New & Free

Progression in knowledge

www.planassessment.com


PSTT TAPS resources - lesson plans

TAPS OVERVIEW	FOCUSED ASSESSMENT OVERVIEW	FOCUSED ASSESSMENT PLANS	FOCUSED ASSESSMENT EXAMPLES	TAPS FILES
---------------	-----------------------------	--------------------------	-----------------------------	------------


THESE LESSON PLANS PROVIDE SUPPORT FOR SELECTING ONE SKILLS FOCUS WITHIN THE CONTEXT OF A WHOLE ENQUIRY.

+ FILTER RESOURCES

EY (P1) [8 RESOURCES]	▼
Y1 (P2) [13 RESOURCES]	▼
Y2 (P3) [13 RESOURCES]	▼
Y3 (P4) [14 RESOURCES]	▼
Y4 (P5) [14 RESOURCES]	▼
Y5 (P6) [18 RESOURCES]	▼
Y6 (P7) [15 RESOURCES]	▼



TAPS Plan for Focused Assessment of Science

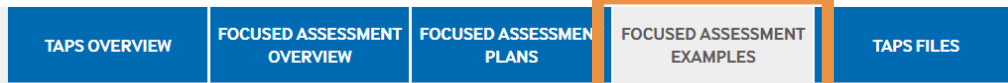


Topic: Materials or Forces	Year 2 Age 6-7	Rocket mice
Working Scientifically Do: Perform simple tests to answer questions	👁️👁️	Concept context Can link to materials (properties, uses, changing shape) or forces
Assessment Focus		
<ul style="list-style-type: none"> Can children begin to be systematic in their testing? Can the children use their tests to suggest answers to questions? 		
Activity		
Demonstrate rocket mouse: put pre-made mouse on top of plastic bottle and whack bottle with both hands. Template at: http://www.sciencemuseum.org.uk/educators/teaching_resources/activities/rocket_mice.aspx Children make rocket mice and explore in 3s with different sized bottles. Consider whose mouse went the furthest. Prompt children to explain how they knew it went further. Collect children's ideas for measuring eg hold next to a metre ruler, put a post it on the wall to show how high it got, shoot them across the floor (45° bottle) – this can create a 'floor graph'. Children could make predictions e.g. I think x will go the furthest because... Select a method of comparing/measuring then try comparing different sized bottles again e.g. try measuring in 3s or have class competition by shooting mice across the floor.		
Adapting the activity		
Support: provide very different sized bottles, shoot across floor Extension: provide equipment for measuring independently Other ideas: What if - we add ears, a tail, a cape...which would/did go further?		
Questions to support discussion		
<ul style="list-style-type: none"> Whose mouse went the furthest? Why do you think it did? How do you know it went further? Can you measure how far/high it goes? Does it go that far every time? What if we try a different bottle/mouse? How could we make it go even further? 		
Assessment Indicators		
Not yet met: Explores activity 'in the moment' e.g. without comparison between bottles or mice. Says which mouse they think will go the furthest, but does not say why e.g. <i>it will be Abi's</i> . Meeting: Beginning to compare systematically. Able to explain how they know which one will go the furthest e.g. <i>it went up to there on the wall/floor last time, it'll go higher than the metre stick</i> . Possible ways of going further: May record measurements independently or note accuracy e.g. <i>we'll struggle to measure it because we don't have time to measure before they come down</i> . Notice patterns and explains scientifically e.g. between larger bottles and amount of air pushed.		



<https://pstt.org.uk/resources/curriculum-materials/assessment>

PSTT TAPS resources - examples of pupils' outcomes



THESE WORK SAMPLES PROVIDE EXAMPLES OF DIFFERENT WAYS SCHOOLS COULD RECORD SCIENCE.

[FILTER RESOURCES](#)

- EY (P1) [0 RESOURCES] ▼
- Y1 (P2) [14 RESOURCES] ▼
- Y2 (P3) [11 RESOURCES] ▼
- Y3 (P4) [18 RESOURCES] ▼
- Y4 (P5) [12 RESOURCES] ▼
- Y5 (P6) [12 RESOURCES] ▼
- Y6 (P7) [11 RESOURCES] ▼
- TRANSITION [0 RESOURCES] ▼



Focused Assessment of Science



Topic: Uses of materials	Year 2 Age 6-7	Title: Rocket mice explanations
Working Scientifically Focus Review: using their observations and ideas to suggest answers to questions		Conceptual Knowledge Context Links to changing shape of materials or pushing forces
<p>Example Children were asked to explore rocket mice (paper mouse on top of an empty bottle, whack the bottle and the mouse flies). http://www.sciencemuseum.org.uk/educators/teaching_resources/activities/rocket_mice.aspx Which bottle/mouse goes the furthest? This class tried with different bottles in 3s to see which would go the highest, then as a class tested different mice at a 45° angle to create a 'floor graph'. Children were asked to predict and explain on post-its at different times during the lesson and a TA also scribed some responses in whole class discussions.</p> <p>Children meeting the objective would be able to use their observations during the lesson to explain how far the mouse went, for example, noticing the relevance of mouse shape/size/additions, how hard the bottle was hit or the size of the bottle. Some children may go further by mentioning a push force, or by beginning to evaluate their investigation, for example, noting that it was hard to know which mouse went the highest.</p> <p style="text-align: right;">Example from Victoria Park Primary School, Bristol</p>		

<https://pstt.org.uk/resources/curriculum-materials/assessment>

PSTT TAPS resources



Overview of TAPS plans for Focused Assessment of Working Scientifically

(Any focus can be chosen for open-ended enquiries, these are only suggestions)



	Plan		Do		Review	
	Ask Qs and plan enquiry	Set up enquiry	Observe + Measure	Record	Interpret + Report	Evaluate
KS1 (age 5-7) <i>Develop close obs</i>	Ask simple Qs and recognise that they can be answered in different ways*.	Perform simple tests.	Observe closely, using simple equipment.	Gather and record data to help in answering questions.	Identify and classify. <i>Use appropriate scientific language to communicate ideas.</i>	Use their observations and ideas to suggest answers to questions.
Y1 TAPS plans	Materials: reflection tests	Materials: floating and sinking	Plants: structure	Seasons: seasonal change	Animals inc Humans: animal classification	Animals inc Humans: body parts
Y2 TAPS plans	Materials: waterproof	Materials: rocket mice	Plants: compare growth	Living things: woodlice habitats	Living things: nature spotters	Animals inc Humans: handspans
Lower KS2 (age 7-9) <i>Develop systematic approach</i>	Ask relevant questions and use different types* of scientific enquiries to answer them.	Set up simple practical enquiries, comparative and fair tests.	Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Identify differences, similarities or changes related to simple scientific ideas and processes.	Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Use straightforward scientific evidence to answer questions or to support their findings.
Y3 TAPS plans	Animals inc Humans: investigating skeletons	Forces: shoe grip Forces: strongest magnet	Plants: measuring plants	Light: making shadows Forces: cars down ramps	Rocks: rock reports	Plants: function of stem Forces: balloon rockets
Y4 TAPS plans	Sound: investigating pitch	Materials: drying materials	Materials: measure temperature	Living things: local survey	Electricity: conductors Sound: string telephones	Animals inc Humans: teeth (eggs) in liquids
Upper KS2 (age 9-11) <i>Develop independence</i>	Plan different types* of scientific enquiries to answer <i>their own</i> questions, including recognising and controlling variables where necessary.	Use test results to make predictions to set up further comparative and fair tests.	Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	Report and present findings from enquiries, inc conclusions and causal relationships, in oral and written forms such as displays and other presentations, <i>using appropriate scientific language.</i>	Explain degree of trust in results. Identify <i>and evaluate</i> scientific evidence (<i>their own and others'</i>) that has been used to support or refute ideas or arguments.
Y5 TAPS plans	Materials: dissolving Materials: nappy absorbency	Materials: insulation layers	Animals inc Human: growth survey Forces: spinners	Materials: sugar cubes Space: craters	Materials: champion tapes Living things: life cycle research	Forces: aquadynamics
Y6 TAPS plans	Electricity: bulb brightness	Animals inc Humans: heart rate	Light: investigating shadows	Living things: outdoor keys	Living things: invertebrate research	Evolution: fossil habitats Evolution: egg strength

*Types of enquiry including: observing changes over time, noticing patterns, grouping and classifying, comparative and fair tests, using secondary sources.

(English 2013 National Curriculum statements, additions from Interim Teacher Assessment framework 2016-7)

<https://pstt.org.uk/resources/curriculum-materials/assessment>

Summative judgements – what you need to do

- If you have covered all National Curriculum statements in sufficient depth, assume all children are secure.
- Record children who are not secure.
- Consider what additional opportunities can be provided for these children.
- You do not need to assess children for working at greater depth

On going tracking

Year	1	Topic	Plants	Term	
1. Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.					
2. Identify and describe the basic structure of a variety of common flowering plants, including trees.					
Notes on children that are not yet secure					



Primary Science
Education Consultancy

Home

Advice

CPD

Resources

Projects

About



Advice



CPD



Projects



Resources

www.primary-science.co.uk



On going tracking

	asking simple questions and recognising that they can be answered in different ways	observing closely, using simple equipment	performing simple tests	identifying and classifying	gathering and recording data to help in answering questions	using their observations and ideas to suggest answers to questions
Living things and their habitats						
Plants						

On going tracking

	A	B	C	D	E	F	G	H
1	YEAR 1							
2	Science/Name							
3	Plants							
4	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees	1	2	2	2			
5	Identify and describe the basic structure of a variety of common flowering plants, including trees	1	2	2	2			
6	Animals, including humans							
7	Identify and name a variety of common animals including fish, amphibians, reptiles, bird and mammals	2	2	2	2			
8	Identify and name a variety of common animals that are carnivores, herbivores and omnivores	1	2	2	2			
9	Describe and compare the structure of a variety of common animals	1	2	2	2			
10	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	2	2	2	2			

www.primary-science.co.uk

Summative judgements

– what you do not need to do

- You do not need to assess children for working at greater depth.
 - No expectation
 - No statements to support
 - Extra work
- You **do** need to provide challenge for more able pupils.

What to do on returning to school

- Ensure assessment of what was being taught before closure has been completed
- Identify:
 - what would have been covered during closure
 - what can be covered well in the rest of the academic year
 - what should be covered in a later year
 - the most suitable year group/topic to add what hasn't been covered to

On the chat

- How are planning and assessment for science linked in your school?
- What assessment strategies have you found that work particularly well?