



Curriculum Materials

Learning Journey

Crime Scene Investigation

Teeth



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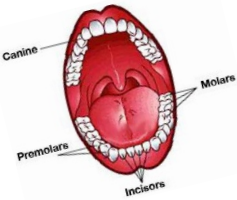
Crime Scene Investigation: Teeth



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Crime Scene Investigation: Teeth



Focus

This project focuses on developing children's **questioning** and abilities to **connect their learning** to the wider world & across the curriculum.

Rationale

Throughout the school children have a tendency to see lessons in isolation and need encouragement **to make links across the curriculum and to experiences in the wider world**. Many children speak a mixture of languages and need support in developing their **questioning skills**.

The initial stimulus of a crime scene was designed to **engage and motivate children** and **prompt questions**. My aim was to build on children's questioning and observations. I wanted the children to be the driving force of their learning within curriculum guidelines, and to foster understanding that science is not an isolated subject, but linked into real life and the wider world around them.

Implications for teaching and learning whilst the focus was on allowing children **to take ownership** of their learning and **fostering scientific questioning** skills. I needed to **capitalise on their areas of interest** connected to curriculum requirements. In order for children to **make explicit connections** between areas of the curriculum, we needed to provide opportunities for **cross curricular** activities.



Age 8 - 9

Learning Activities: *questioning*, observing and *making connections* across the curriculum.

Creative dispositions: *motivation, making connections*

Synergies: *questioning and curiosity, motivation and affect*, reasoning, *teacher scaffolding and involvement*

Background

School Setting: inner city 2 form entry school. Area of social disadvantage, diverse home languages and ethnicities

Curriculum Links:

- Classify and name groups of animals.
- Identify different types of teeth and their functions.
- Asking simple questions, recognising they can be answered in different ways
- Gathering and recording data to help in answering questions

Overview of activities

Starting Point: Exploring the 'crime scene' in the school grounds

- *Sharing observations* (eyeball, tooth, footprints) - children shared evidence found
- *Raising questions* – children discussed what puzzled them and what questions they had
- *Whose tooth is this?* - children focused on the tooth they found – how might they find out more?
- *Class Blog* – children contributed what they knew and what they wanted to find out as the topic progressed.

Learning Journey

What animal might this tooth have come from?:

- *Initial investigations* – examining tooth impressions and suggesting ideas about the type of animal they belonged to
- *Researching/generating questions* – further research and reasoning about the possible profile of an animal with this tooth, for example related to diet

Children finding out about their own teeth: Raising questions and finding answers

- *Researching/generating questions (links to English skills)*– children carried out research using secondary sources, recording findings for example functions and types of teeth, numbers of teeth, Why do teeth fall out?
- *Investigating their own teeth (collecting data, links to data handling in mathematics)* – for example children took images of their teeth, created clay models of teeth, counted teeth, investigated what they are made of.

Throughout learning journey children were asked what interested them and what they wanted to find out. Our blog posts enabled children to transfer learning into their home environment.

Children collected and displayed data in their own ways making links with with mathematics lessons.

Developing the learning journey: Starting Point: Exploring the 'crime scene'

Activity: Exploring the 'crime scene' Children came into school to find a 'crime scene' in an area of the playground. Children were encouraged to explore the scene making observations and discussing possible ideas and explanations based on evidence.

Rationale:
Fostering **curiosity and questioning**
Making connections, speculating based on evidence.

Key Questions....

What can you see?
How does this help you?
What evidence can you find to support that?
If you can see that, what assumptions can you make?

Children's responses

They put their feet into the footprints .
Child: It's big!
TA: Who could it belong to?
Children looked at their feet: It can't be you miss, your feet are tiny. It must be an adult as they are bigger than me.
Children asked adults to place their feet in the footprint until they found one that matched the size.
CT: Have you looked at all the evidence?
The children continued to explore further.

Look there's an eyeball.
Yuck. Wow look at that footprint. It's huge!

Teacher: Wow I wonder who could it belong to?

Useful as an initial assessment to see what **questions** were developed and what **links** were naturally made by children.

Someone big

I've found a pointy tooth covered in green slime!

Role of adult questioning to focus children on evidence and explanation. Importance of children modelling/ listening to others and repeating if unsure.

Some children need to be given choices to help them in answering questions and explaining thoughts. Important role of confident peers/ adults to model questions and scientific language.



Developing the learning journey: Initial Investigations

Activity: Exploring tooth impressions

Children recapped what they knew about types of teeth. They discussed the characteristics of the tooth that had been discovered in the crime scene. They examined tooth imprints and made comparisons,

Rationale: The intention was for children to **make connections** between different types of teeth and an animal's diet, encourage children's **use of scientific vocabulary** in **explaining** their ideas

Key Questions....

Why do you think this tooth is this shape?
Why is it better for that purpose than another tooth?
How do you know that imprint came from that tooth?
How are these teeth different?
What do you notice about the herbivore/ omnivore and carnivore teeth?

Teacher: how do we know the culprit could be a carnivore?

Child: I think this one is a horse...

Teacher: Why could it be a horse?

Children **suggested connections** between features of the teeth imprints and diet, using reasons based on evidence. They were **motivated** to explore their own teeth.

Child: The teeth are sharp. It must need them to rip raw flesh.

I needed to question children to explain their ideas. They also needed modelling of specific scientific language throughout the lesson e.g. omnivore, carnivore, herbivore, canine

It doesn't have any sharp teeth for ripping meat. It has flat molars to chew hay.

Model language and place key words with images onto board/ tables to encourage children to use scientific vocabulary in explanations. Important to model questions and use of scientific language.



Developing the learning journey: Researching/ generating questions

Making links to English skills

Activity: I shared a **range of questions** that I wanted to find out. As a class we mind mapped what the children wanted to find out, modelling key vocabulary. We discussed the **key questions to research**, where children could go to research this **and how findings could be recorded**.

Key Questions....

How do you decide what information is important?
How will you record this information?
What are you trying to find out?
How many teeth do children/ adults have?
Why do teeth fall out?
What are the roles of different teeth?

How many different types of teeth does everyone have?



Rationale: Encouraging children to create their **own questions**. **Making links** to English skills explicit and modelling research processes, taking notes, drawing images etc.

As questions were their own children took ownership and were **motivated** to complete research. Children were beginning **to make links with English skills** needed to research other areas of the curriculum.

Children needed to be refocused on areas they were researching. Adults helped with key vocabulary and modelled how to collect information along with questioning to help children to research their decided questions.

You can't just copy, you have to understand what you are writing. Read it first then we can decide what we want to write.



So that's why carnivores have incisors so they can rip meat

And omnivores like humans need lots of different shapes teeth because we eat all sorts of food.

But I know animals like herbivores need flat teeth because they only need to grind up fruit and vegetables.

Value of recording children's **questions** and **allowing time** to collect this information at a later period. Provide opportunities across the curriculum to use scientific vocabulary. Children wanted to know more about each other's teeth.

Developing the learning journey: Collecting data about teeth

Making links to data handling in mathematics

Activity: We began by using mirrors to look at the children's teeth - identifying different types of teeth they could see, counting how many teeth they had and compared them to each other. This linked to our data collection topic. We discussed how we could collect this information across the class and how to share the data.

Rationale: Following children's **questions and interests** in their own teeth. It was designed to encourage **making comparisons, and asking questions about data**

Key Questions....

How will you record this information?

How do you know you need more than Scientific skills to collect data?

What other skills do you need?

What makes this information important to you?

What conclusions can be made from the data you have collected?

I needed to model how to collect data using a tally. Then children were able to make links to mathematics and data handling and make suitable suggestions for how to record the data.

Look all of us have incisors and canines because we eat meat. Then our molars grind our food down.



This is like our maths, we can make a tally first, then we need to decide our intervals.

Children were able to ask a **range of questions about their data** and some children used the/prompt questions written in their maths books to help them.

Why do we have so much water in our mouths?



Most of us have about 26 teeth. But some of us have less, that's because they have fallen out.

What is the difference between how many incisors I have and how many molars I have?



To promote **cross curricular links** we used teeth problems in our mathematics and used the scientific vocabulary across the curriculum. A list of class (rather than individual) questions would be useful - that can be added to throughout topic,

Reflections: Children's progress

- Children **were excited** by the initial hook of the crime scene. They commented that they liked the dressing up and acting as 'scientists.'
- Children were **motivated**, consistently **engaged** and **took ownership** over their learning.
- The children were **curious** about where their learning would go next which promoted **questioning** and encouraged them to further their knowledge through **their own research**.
- Children enjoyed being **given time** to research information **for themselves**.
- **Selection of peers to work with** was key to progress. Children began to become selective when choosing, for example a less confident reader would choose a more able reader when researching in order to complete the task.
- **Discussing alternative views and explanations** was of high importance. Children would ask questions including 'how do you know that?'
- Children became more confident in transferring English and Maths skills (involving use of ICT for research or data handling) to the Science curriculum and acknowledging the **cross curricular connections** made.
- At the beginning of the topic children made a mind map of what they knew about teeth and any questions they had. Children added any **further questions** as the topic progressed.
- Children reflected on their own learning and questioned each other informally on the **Class Blog**.
- Once the topic was completed children shared what they had learnt in a mind map, along with recording any final questions. They then addressed the final questions with their own research.

Children's reflections on their progress

Children's reflections on their progress

- Enthusiastic to investigate Crime Scene
- Modelling enhanced vocabulary and questions to be used
- Making links to outside world
- Skills transferred throughout curriculum



"I liked writing on the blog and asking questions to my friends" Shada
"When I'm at home and I have an idea I can ask my teacher a question or tell her what I think" Jevaun
"I like using the blog to share my ideas, it's not just for science but all my learning" Joseph

News Flash! Crime at Hill Mead!



This morning Hill Mead staff came in to discover a horrific scene! An awful crime has been committed and we need to find out what has happened. Every year group will be conducting their own investigations to discover what has happened.

What can you see?
What could have happened?
How could we discover what has happened?

Posted by Miss Lawrence at 03:59



Daniel

someone has broken into the school

Reply

* Replies



Miss Lawrence

What makes you think that Daniel?

Delete

Samuel

because there are bones so someone could be hurt, that's not how we left the park area

Children's Progress



To begin with Arriana did not enjoy science and was often **reluctant to join** in class discussions. At her table she tended to take a back seat, only joining in when she felt adults were watching. During the 'Crime Scene Investigation' Arriana was **enthusiastic** to join in with activities, commenting "I love wearing these lab jackets. Now I'm a real scientist". She continued discussion within the classroom and during playtimes, often visiting the area to 'look for clues'. She now has a more **positive attitude** towards science and is asking more **insightful questions** using her observational skills.

Further development: to use role play as a way to motivate children into engaging in scientific activities.



Marcus is always **engaged** within sessions and asks questions about his learning, however sometimes **not focussed** to the task in hand. To begin with he continued this attitude of asking unrelated questions. However, I began asking him to start looking at the evidence in his books for appropriate questions for the session. He then began **asking questions about his previous learning** and began to **make some connections** between prior sessions and new information connected. "Well it can't be a rabbit because the teeth yesterday had sharp canines" with the support of pictorial word banks he also began to become more confident with scientific language which he had not done so before.

Further development: to allow children regular access to prior learning to enable connections to be made.



Chante enjoys science sessions but sometimes becomes disengaged without physical resources. Throughout the investigation she was **keen to learn more**. She often volunteered to go into the scene and was thoughtful when collecting evidence "we had some tooth imprints, so we need to find something to do with teeth". She became more focussed and observed many discoveries which she brought to the classroom in her questioning. She used teacher's **modelled questions** to help her structure her own and began to take more care in what she was asking. *Further development:* Provide practical contexts for investigation, to models scientifically structured questions for her to base her questioning skills on.

Reflections: Teacher Role

- Providing children with more **time and opportunity** to create their own scientific questions and research in areas of their choice fostered **their curiosity, motivation and ownership**.
- Weaving terminology into **sessions across the curriculum** helped children become more confident in using scientific vocabulary.
- **Modelling questions** and sentence starters to my class, along with my teaching assistant, enabled children to have a clear examples of how to verbalise their own questions. Children were encouraged to share questions at the end of lessons. These were used to inform future planning.
- Understanding of scientific concepts was consolidated through discussion throughout sessions. Children were prompted **to make connections** to their observations and their growing knowledge and experience in offering explanations.
- **Continuous assessment** of children's questions and explanations guided planning and teaching.

Classroom Environment:

- The children enjoyed learning to be extended outside the classroom and followed up at home on the class blog.
- Children could use a range of ways of recording e.g. ipads, videos, pictures
- Use of costumes and physical resources relaxed children and they became more adventurous with vocabulary as they weren't as scared at getting it wrong.
- Provision of word/ picture banks gave children a reference point when experimenting with new vocabulary.

Next Steps

Continue to use role play and drama to allow children to play at using vocabulary and to share questions before organising their thoughts. Allow science to be taught as a topic stretching explicitly across all areas of the curriculum. Learning should take place in a variety of environments to allow children to develop further interest in their future ideas.



Reflection questions for the reader

- In what ways do you encourage children to generate their own questions?
- How do you help children make connections and use skills across the curriculum?
- What strategies do you use to foster children's interest in science?



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