Learning Journey: Crime Scene Investigation

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 information
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

Setting the scene

Focus
This project focuses on developing children's questioning and abilities to connect their learning to the wider world and 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.

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.
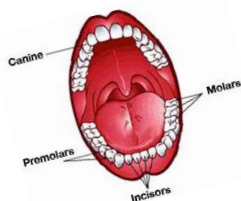
Learning Journey

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 mathematics lessons.

Developing the learning journey

Starting point: 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.

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?

Rationale

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

Children's responses

Someone big

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

Teacher: Wow I wonder who could it belong to?

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

The children put their feet into the footprints.
Child: It's big!
Teaching Assistant: 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.

Teacher: Have you looked at all the evidence?

The children continued to explore further.

Reflections and implications

This was useful as an initial assessment to see what questions were developed and what links were made naturally by children.

Adult questioning was important to focus children on evidence and explanation.

Children modelling/ listening to others and repeating if unsure was also supportive.

Implications: Some children need to be given choices to help them in answering questions and explaining thoughts. There is an Important role for 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.

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's teeth?

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.

Children's responses

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

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

Teacher: Why could it be a horse?

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

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

Reflection and implications

Children suggested connections between features of the teeth imprints and diet, using reasons based on evidence. They were **motivated** to explore their own teeth. I needed to question children to explain their ideas. They also needed modelling of specific scientific language throughout the lesson for example: ominivore, carnivore, herbivore, canine

I**mplications:** Model language and place key words with images onto the board or tables to encourage children to use scientific vocabulary in explanations. Important also to model questioning and use of scientific language.

Activity: Researching and generating questions (links to English skills)

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.

Rationale:

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

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?

Children's responses

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

How many different types of teeth does everyone have?

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

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

Reflections and implications

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.

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.

Implications: The 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.

Activity: Collecting data about teeth (links to data handling in mathematics)
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. The activity 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?

Children's responses

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

Why do we have so much water in our mouths?

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

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?

Reflections and implications

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.

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.

Implications: 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.

Overall 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

Enthusiastic to investigate the 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?
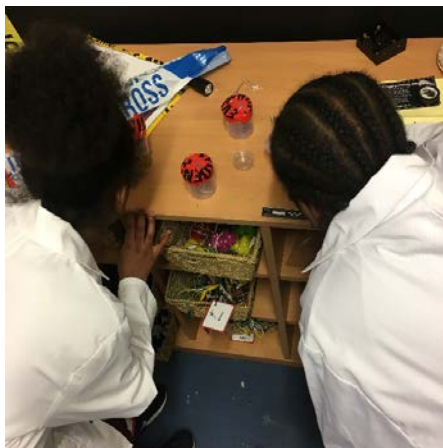
Posted by Miss Lawrance at 03:54

Daniel
someone has broken into the school

Reply

• Replies

Miss Lawrance
What makes you think that Daniel?

Delete

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

Children's progress: Examples

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.
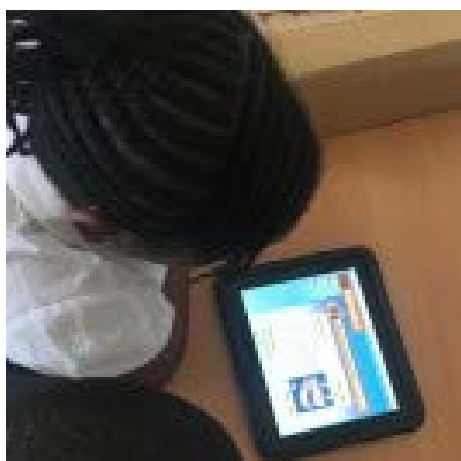
Chante enjoys science sessions but sometimes becomes disengaged without physical resources. Throughout the investigation she was keen to learn more. She often volunteered to go into the scene and was thoughtful when collecting evidence "we had some tooth imprints, so we need to find something to do with teeth". She became more focussed and observed many discoveries, which she bought 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 model scientifically structured questions for her to base her questioning skills on.

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 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 for example: 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?