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QUESTION

Children and young people investigate a scientifically oriented question

Questions children and young people might ask:

I/we want to know why...? I/we wonder.... What do I/we want to find out? What do I/we want to know? What if...? What if I/we knew...? What would change if...? What would happen if... Who, What, Where, When and Why? Why does...?

What art form is most helpful here to provoke questions?

Is there something about movement, sound or visuals that could help to share the question?

Questions for teachers to support enquiry:

Do you think that....? How might you explain...? In your opinion what would happen if...? What differences and similarities do you see between....? Can you predict what would happen if...? Do you know any theories to explain...

What are forces? What is a centrifugal force? Can you see forces?

Dialogue

Interdisciplinarity

Possibilities

Balance and navigation

How fast can I move? How fast can I dance? Are they the same speeds or different?

Dialogue

Possibilities

We want to know why sparklers burn really quickly, but metal doesn't set on fire. What makes some reactions happen faster than others?

Dialogue

Possibilities

Interdisciplinarity

How can you amalgamate the arts at this stage?

For further information please contact Dr. Kerry Chappell: k.a.chappell@exeter.ac.uk

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EVIDENCE

Children and young people give priority to evidence

Questions children and young people might ask:

How can we explore? What do I/we notice? What do I/we see? What is happening

What art form is most helpful here to collect evidence?

How can your chosen art form help you see your evidence differently e.g. imagination and storytelling

Questions for teachers to support enquiry:

What do you observe? Can you describe what is happening? How will you find out? What will you change? What can you measure? What variables are affecting what is happening? What have other people said about this? What would be good evidence?

By dropping drops of paint onto a paper plate, I am going to spin the paper plate and see what happens?

Ethics and trusteeship

Empowerment and agency

Risk, immersion and play

Create a motif, mark out a distance with a start and finish point, perform the motif along a straight pathway, time how long it takes to perform the motif, work out the speed i.e. Speed = distance / time?

Interdisciplinarity

How can we explore how fast things burn? We can see that powdered iron burns really fast if we sprinkle it through a flame, but we can't set light to metals? Does the size of the piece of metal make a difference to other kinds of reactions?

Dialogue

Possibilities

Interdisciplinarity

How can a different art form reveal your evidence in a different way?

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ANALYSE

Children and young people analyse evidence

Questions children and young people might ask:

I/we notice that… Was I/ were we expecting this? When we changed____, ____ happened... Why did nothing happen? Why did this happen that way? Why is it that way?

How can your chosen art form help with your analysis

How can you accommodate the arts at this stage?

Questions for teachers to support enquiry:

What patterns can you see in the data? Can we look at the data differently (perhaps using a graph or chart)? What makes you say that? Why do you think that is? Can you give an example of where… that happens? …This might happen? Can you explain how you worked that out? Is there another explanation?

What happens to your body if you spin fast, slow, stop and go?

Risk, immersion and play

Dialogue

Possibilities

How fast did I travel? What happens if I change the movements? What happens if I change the pathway? What happens if I change the dynamic I am performing in?

Dialogue

Interdisciplinarity

Balance and navigation

Possibilities

We can see that the powder catches light more easily than the lump if we always use the same amount. When we changed the size of the piece it got easier to light

Dialogue

Possibilities

Interdisciplinarity

How can you combine your analysis with creativity at this stage?

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EXPLAIN

Children and young people formulate an explanation based on evidence

Questions children and young people might ask:

What? When? Who?
Where? How? Why?

How can dance, visual art, film, poetry, drama or music bring your explanation alive?

How can your art form help you to share your explanation with an audience?

Questions for teachers to support enquiry:

Can you explain what you have discovered using ideas you already have about science? Is there anything you can't explain? Have you seen anything similar happen before? What / Where is the evidence that supports your suggestion? If someone asked you a question about this, what might their question be?

When I spun the plate faster, why did the paint move further out from the centre of the circle?

Dialogue

Balance and navigation

Why did some actions / dynamics / pathways result in different times? What is the optimum action, dynamic, pathway I can travel along the quickest?

Dialogue

Interdisciplinarity

Possibilities

When it burns, what is the reaction? What is happening to make it react? If particles of metal and oxygen have to combine, how is that happening? So if they have to collide, why does the smaller pieces mean it reacts faster?

Dialogue

Interdisciplinarity

How can I demonstrate these results with sound, visuals or movement?

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CONNECT

Children and young people connect explanations to scientific knowledge

Questions children and young people might ask:

How can I/we extend my thinking now I know this? How is this connected to what I/we already know? What challenges / questions does this now raise in me/us?

How can your arts-assisted explanations connect to the right scientific knowledge?

Questions for teachers to support enquiry:

How is that / this connected to your previous learning? What made you think of that? Where did that idea come from? Is that a direct cause of the effect or is it just a coincidence, a correlation? How much did you know about... before starting your investigation?

Can you use the arts to enhance your explanation at this stage?

I knew I could spin something fast and slow but I didn't realise what would happen

Empowerment and agency

Possibilities

I knew I could move fast and now I know the actual speed I move at.

Empowerment and agency

Can we connect this to the idea of particles getting rearranged in a reaction? We wonder whether there is a link to things getting hotter?

Possibilities

Interdisciplinarity

How can you connect your scientific knowledge to your life and experiences?

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COMMUNICATE

children and young people communicate and justify explanation

Questions children and young people might ask:

How will I/we share this? What do I/we need to do to explain this to other people? What's going on here? Why do I/we think this has happened?

How can I use a specific art form to present my ideas to a new audience?

How can you harmonize your science and arts knowledge here?

Questions for teachers to support enquiry:

How will you share your results with others? How will you explain this to other people? What is the best way to share what you now know about this? Does this work tell a story?

I will display the art work I created

Ethics and trusteeship

Interdisciplinarity

Empowerment and agency

I will create a dance linking my results together so I can present my findings

Ethics and trusteeship

Interdisciplinarity

Empowerment and agency

I will create a photo collage capturing each material burning

Ethics and trusteeship

Interdisciplinarity

Empowerment and agency

How can you creatively integrate the arts at this stage?

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REFLECT

Children and young people reflect on the inquiry process and their learning

Questions children and young people might ask:

What does this make me/ us wonder now? What isn't explained? What new reasons does my/our claim raise? What would it be like if…? How would it be different if…? Suppose that ... What would change if...?

Can I use an artistic medium (a film, a drama dialogue) to share my reflections and questions?

Questions for teachers to support enquiry:

Did you discover what you set out to investigate? What did you learn about yourself as you worked on this piece? What would you change if you had a chance to do this piece over again? What's the one thing that you have seen in your peers work or process that you would like to try in your next investigation?

Can you creatively integrate your reflections with the arts?

What would happen if…..... I spin my plate anti clockwise or clockwise?

Dialogue

Interdisiplinarity

Possibilities

Balance and navigation

What would happen if…. ... my friend performs the motif I created?

Dialogue

Interdisiplinarity

Possibilities

Balance and navigation

What would happen if...if we heat a reaction up? I still don't know why I couldn't get the lump of iron to light.

Dialogue

Interdisiplinarity

Possibilities

Balance and navigation

Can you integrate the arts at this stage to enhance your reflection?

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