Can museum artefacts support beginning science teachers to ask socio-scientific questions?

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Promoting Attainment of Responsible Research & Innovation in Science Education

1. Overview

August 2016 nine Ark beginning science teachers start their initial teacher training.

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February 2017 as part of their subject training, beginning teachers are introduced to socio-scientific inquiry and PARRISE. Training is based around a workshop first delivered by Ralph Levinson and Ruth Amos to Ark trainees in 2016.

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July 2017 beginning science teachers visit the Wellcome Collection in London to select artefacts that could be used in the classroom to stimulate socio-scientific thinking.

2. Rationale

- Students are motivated in science when they are able to answer their own questions.[1]
- Stimulus material can arouse curiosity, causing learners to ask authentic questions.[2]
- But, our beginning science teachers often find it difficult to think of these stimuli when planning lessons at school.

3. Our Question

- Can museum artefacts support beginning science teachers to ask socio-scientific questions that could be used back in the classroom?

4. Response to some artefacts selected by beginning teachers

Stimulus	Description of artefact	Question	Curriculum opportunities
	A painting of Russian dolls by Heidi Kerrison.	Will genetic engineering lead to a loss of individuality? Could there ever be another you?	Genetic engineering Meiosis, inheritance, cloning
	A plastinated body slice of a once living person.	How old was this person? Why hasn't this body decomposed? Who should not be plastinated?	Organ systems Decomposition Ethics, disease
	A barometer.	How accurately can we predict the future using science?	Accuracy and predictions Air pressure Nature of science

5. Reflections

1. Teachers enjoyed the process of generating questions from artefacts, finding it **"highly motivating"**.
2. Some artefacts helped teachers to **approach abstract concepts from a concrete starting point** e.g. barometer to teach accuracy.
3. Most **artefacts generated open questions** that could be explored during the initial stages of an inquiry**.** Questions focused on **advancing conceptual understanding through a human context** as opposed to finding a solution to a socio-scientific problem**.** Perhaps this is because conceptual understanding is what matters most to these beginning teachers at this point in time.
4. Our teachers need more support in **identifying questions and stimuli that matter most to students**. This is important as socio-scientific inquiry requires authentic questions that students want to find solutions to. [1]

Reference

1. Chin, C. and Kayalvizhi, G. 2005. What do pupils think of open science investigations? A study of Singaporean primary 6 pupils. *Educational Research*, 47(1): 107–126.
2. Chin, C. 2004. Students' questions: Fostering a culture of inquisitiveness in science classrooms. *School Science Review*, 86(314): 107–112.

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