

# HOW CAN I USE QUESTIONING TO EXPLORE THE UNEXPECTED WITHOUT LOSING CONTROL?



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This project is being funded by Templeton World Charity Foundation as part of a wider scheme of research titled Big Questions in Classrooms.

Although studies have explored school pupils' attitudes concerning science and religion, there has been little research on beginning teachers' experiences in their development and formation and not much is known about how big questions are framed in classrooms or the extent of teachers' experiences of the science/religion encounter. This project addresses the gap, develops informed responses for teacher education and finds some preliminary understandings of the impact of the use of that knowledge in teacher education programmes.

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**TEMPLETON WORLD**  
CHARITY FOUNDATION



**BIG QUESTIONS**  
*in* CLASSROOMS

# HOW CAN I USE QUESTIONING TO EXPLORE THE UNEXPECTED WITHOUT LOSING CONTROL?

## Science Religion Encounters Toolkit 8

Teacher questioning, exploring the unexpected and 'losing control' in the classroom: Discussion and analysis of a lesson on Creation

### INTRODUCTION

This resource investigates a recorded lesson. It is for those leading teacher education, training or development and may be used by beginning teachers as well.

Researchers observing videotape of the lessons explored in **Sub Project 1** of the **Science Religion Encounters** project found that teachers employed both visible and invisible pedagogies that limited the diversity of ideas that were considered legitimate in discussions, and which therefore restricted the scope of pupil questions and responses.

## SUMMARY OF THE LESSON

The learning objective for the year three lesson was to understand 'who made the world, and 'what we can do to look after our world'. The lesson was framed with the statement that "Christians believe that God instructed them to look after the world" and began with the display of two plants, one of which was dead and had not been cared for and a second plant that was thriving and had been watered in the preceding two weeks.

The teacher demonstrated that the dead plant could not be brought back to life through watering it. She went on to build a Lego structure and as the pupils watched she threw it on the floor and breaks it. Pupils were then asked to create something in play dough and then to destroy it as a group so they could also feel what it was like to destroy something they had made themselves.

The class are reminded that God made the world and that God is also 'unhappy with the way the world is looked after now'. The teacher leads a discussion on how Christians can look after world, the role of charities and how the Gospel reinforces this message.

In the last quarter of the lesson pupils are shown the Michael Jackson musical video 'Heal the world' which shows images of animals that have been killed and refugees fleeing a war zone. The teacher leads a whole class discussion on how the video made them feel and asks them what they could do to help the world.

## INTERPRETING THE LESSON

Preliminary coding of the lessons found that the majority of the questions were display or closed questions rather than referential. That is teachers tended to ask questions that they already knew the answer to, and they asked questions so that pupils could display the right answer.

- In the Year 6 class just under 50% of all questions were closed and in the year three class 75% of the questions were closed.
- A closer examination of the data through secondary coding found that a greater proportion of the questions were effectively closed than we had first realised.
- Many open or referential questions were actually display questions.
- Some were not even questions at all as the teachers did not leave space/time in the lesson for pupils to address them.
- Twenty percent of all questions were rhetorical, this means that questions were asked with no expectation of an answer, either because the teacher continues to talk straight after asking the question or because the teacher ignored the raised hands of pupils and then provided the answer themselves.
- We found that many questions that appeared open were ambiguous, that is they appeared to be welcoming a variety of responses, but it became clear from the teachers' following comments that only 'one' answer would be acceptable.

## EXEMPLIFICATION

An example of seemingly open questions, that were not really open was around the Michael Jackson video in the year 3 class. After playing the class the video, the teacher opened up a discussion with them about how they could help the world:

**Teacher:** *How could we help the world?*

Pupil: Stop doing wars.

**Teacher:** *But what else?*

Pupil: hmhhh

**Teacher:** *But what else .... Maybe the trees?*

Pupil: We could stop cutting down the trees!

**Teacher:** *Yes, wouldn't that be wonderful, we could really make a difference if we did that, don't you think so?*

The high proportion of rhetorical and closed questions meant that there was little space for pupils to raise questions that deviated from the prescribed narrative of the lesson. In the year six class teacher questions structured the learning so that pupils were unable to respond in ways that challenged teacher definitions and categorisation of knowledge in relation to Creation and the 'permissive repertoires' referred to by Alexander (2018) were absent from these lessons. There were multiple activities, changes in pace and focus but there no opportunities for deviation from the pedagogic intent. The dialogue and description of the teachers gestures below is an example of how teacher questions control both the parameters of the discussion and how pupils are only able to provide answers that fit within those parameters:

**Teacher:** *In this theory the singularity is acting in parallel to .....?*

Pupil: God

**Teacher:** *Yes, God!*

The teacher then explains how planets are formed.

**Teacher:** *So ..... thinking back, how is this parallel to our creation story?*

Nobody volunteers answer.

**Teacher:** *Was there something that existed before?*

Pupil: God?

**Teacher:** *(Pointing to the white board where there is an image of a large earth with the sun behind it). So this was formed and this (pointing to the sun) was one of the first things to be formed – so looking over there (points to the display of the Creation story for genesis) how does this parallel across?*

Pupil: light

**Teacher:** *yes, light. So one of the first things that existed in the universe (points to the whiteboard) is paralleled in the Creation Story.*

## REMARKS

The strong pedagogic framing means that each question the teacher asks is intended to generate an answer that will allow her to then establish a link to the theory that key events of the Big Bang are in parallel with the acts of creation as detailed in Genesis. The teacher draws on a mix of pedagogic tools, including body language, classroom displays, the white board as well her questions and then her responses to pupil answers to create a classroom discourse that is in effect hermetically sealed from any other meaning or knowledge that would disrupt the prescribed narrative of the lesson.

There is no space in the lesson for pupil answers or questions that challenge or counter the teacher theory that the Genesis account of creation can be matched to a scientific narrative of the Big Bang.

Elsewhere research suggests that in the general population the historic conflict metaphor no longer dominates narratives around science (Woolley, M., Bowie, R.A., Hulbert, S., Thomas, C., Riordan, J.-P., & Revell, L. (2022). Primary teachers attending early presentations of this work commented about the primary school culture to ensure lessons achieved intended learning outcomes. In this video that seemed to include arrival at a position that science and religion were compatible. They worried that a strong intentionality for a lesson to achieve a particular learning outcome, could deter open dialogue and exploration of big questions in classrooms.

## QUESTIONS FOR TEACHER EDUCATION AND DEVELOPMENT

1. How might a lesson in a topic area of 'big' or ultimate questions have an intended learning outcome that does not preclude exploratory and inclusive classroom talk?
2. Are you aware of research on teacher talk and how it can be used to broaden rather than limit discussions in the classroom?
3. How does your teacher education or development programme teach questioning? Does it provide subject-specific or generic examples of how questioning can be used effectively? What happens to questions that cross subject boundaries or deal with sensitive issues? What would help this area when preparing to teach lessons?
4. What is the experience of questioning in the classroom – the quality of it, how it might be improved, whether there is room for pupils to ask questions and how space can be made for that in a crowded curriculum?
5. What is the experience of teaching sensitive topics in schools? How might teacher education courses and partnership schools shape this area? What would improve the experience?

# ACTIVITY FOR EARLY CAREER TEACHERS



1. Observe a lesson and write down all the questions the teacher uses. Take time to analyse how many of these questions are closed or open.
2. Investigate the work of Robin Alexander on dialogue to develop practice in dialogue: <https://robinalexander.org.uk/dialogic-teaching/>

## RESEARCH

Video Data of this lesson is stored at the UK Data Archive here:

Riordan, J. (2022). Video-Based Study of Classroom Pedagogy, 2019-2021. [data collection]. *UK Data Service*. SN: 854915, DOI: [10.5255/UKDA-SN-854915](https://doi.org/10.5255/UKDA-SN-854915)

Publications linked to this work are available:

Riordan, J. P., Revell, L., Bowie, B., Woolley, M., Hulbert, S. & Thomas, C. (2021) Understanding and explaining pedagogical problem solving: a video-based grounded theory study of classroom pedagogy, *Research in Science & Technological Education*.

Woolley, M., Bowie, R.A., Hulbert, S., Thomas, C., Riordan, J.-P., & Revell, L. (2022). Science and RE teachers' perspectives on the purpose of RE on the secondary school curriculum in England. *The Curriculum Journal*, 00, 1– 18.

<https://doi.org/10.1002/curj.191>

Other relevant publications:

Robin Alexander (2018) Developing dialogic teaching: genesis, process, trial, *Research Papers in Education*, 33:5, 561–598, DOI: [10.1080/02671522.2018.1481140](https://doi.org/10.1080/02671522.2018.1481140)

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