



Students' perceptions of religion and science, and the relationship(s) between them: The need for epistemic literacy

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Introduction

- **This talk reports on a teaching intervention for year 9/10 students in biology and Religious Education (RE) lessons.**
- **The intervention was intended to help students see that biology is not as reductionist as is often supposed and to deepen students' reflections, empathy and literacy when considering the similarities, differences and relationships between religion and science.**

Context

- **TWCF-funded project on ‘The New Biology’**
- **Educational component**
- **RE lessons**
- **Science lessons**



RE Lessons

Lesson 1

- **Religion and Science: Two Windows?**



“Science and religion are two windows that people look through, trying to understand the big universe outside, trying to understand why we are here.”

Professor Freeman Dyson’s acceptance speech for the Templeton *Science and Religion* prize, 2000.

Design a diagram to present:

- **Definition of science**
- **Definition of religion**
- **Relationship between science and religion**

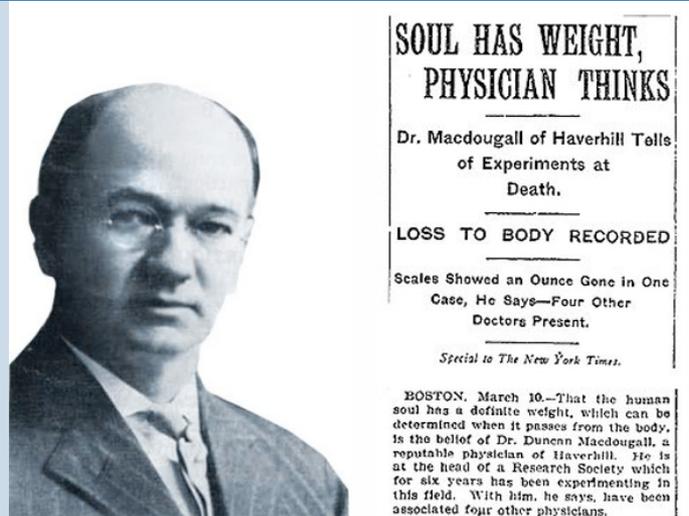
Challenge

- **Include the following in your diagram:**
 - **What we can know and understand through science, if anything**
 - **What we can know and understand through religion, if anything**

Lesson 3

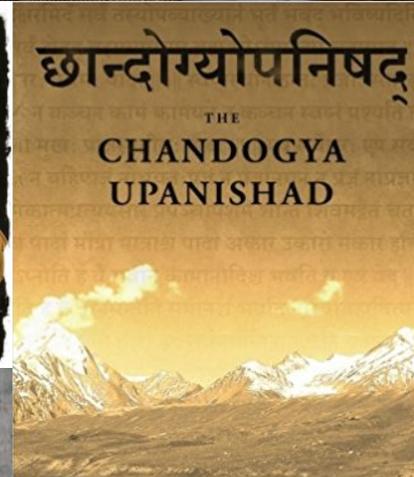
- **Soul Survivor?**





**MacDougall attempted to weigh the soul (21 g).
But it does not tell us what the soul is.**

- **What do you think the soul is?**
- **Do you think MacDougall's experiment was a good way of finding out about the existence of the soul?
Why/Why not?**



Market place of beliefs and theories

Example of a consolidation table

Summary of Argument	For or against existence of the soul?	What is the evidence?	Why is this evidence believable?	Strengths and weaknesses of argument	Similar examples and/or questions

Looking at evidence and arguments about existence of the soul:

- **Qualities and characteristics of strong/weak evidence and argument?**
- **How do science and religion affect how you think about these questions?**

Biology Lesson 1 – When genes do not determine what cells look like

We are very used to thinking that there is a close relationship between the genes an organism has (its genotype) and its appearance (its phenotype). And yet, for a multicellular organism almost all the various cell types it has have the same genes despite looking very different. This lesson gets students to appreciate this and to think about its implications.

Biology Lesson 5 – Do we have free will?

The aim of this lesson is for students to consider whether humans have free will or whether all our actions and thoughts are determined. Using The Truman Show or The Matrix, students think about how we know, or whether we know, that the world in which we live is ‘real’ and not just a computer programme, film or game. They then consider what the implications of being in such an ‘unreal’ world would be for our free will. Finally, students should think about whether what they have learnt at school about genetics, hormones and the nervous system is compatible with free will or not.

Overall findings from the student interviews

The majority of students' views changed

Twenty-one of the 40 students changed their views on the relationship between religion and science as follows:

Table 2:

Students' views which changed	<i>N</i>
From conflict to answering the same question in different ways	8
From conflict to compatible	5
From compatible to conflict	3
From conflict to a combination of conflict and compatibility	3
From incompatible to compatible but maintaining that religion and science are different subjects	2

From conflict to answering the same question in different ways

Eight students initially described the conflictual relationship in terms of a scientific explanation of the origins of life versus a ‘sacred text’ or a ‘magical person’. Further changes were also noticed in this group’s use of language that reflected some epistemic insight into the disciplines of religion and science.

“they have opposed styles but then they have different things about them and they have different beliefs about what the world is and what it’s about.”

(Bilal, after the intervention)

From conflict to compatibility

Five students moved from a perceived conflict to compatibility.

“but after those interviews and the lessons, I started to think that maybe there is room for science.”

(Ali, after the intervention)

“Yes, I think science and religion have quite a lot in common because there’s a cross section between the belief and the evidence.”

(Ranvir, after the intervention)

From compatibility to conflict

Three students moved from a perceived compatibility to conflict.

“They both have theories and ... you really have to believe in both to actually get anywhere ... believing in what they’re doing is in common.”

(Carson, before the intervention)

“people who believe in evolution can’t really believe in God.”

(Carson, after the intervention)

Summary of Overall Findings

- **A survey we conducted before the teaching intervention revealed that the students who were more sure about the compatibility of science and religion were more positive about the contribution and worth of science. They also scored higher on critical thinking skills and were more positive about their science lessons.**
- **After the intervention (during which students were taught biology in a less reductionist way and were taught RE in a way that explored the links with science) students were more likely to support the notion that science and religion are compatible.**
- **Some of the participating teachers also changed their views about the relationship between science and religion, seeing them as less in conflict.**

Questions and Comments

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