

# RESEARCH SUMMARIES FROM THE PROJECT



# ABOUT NICER

## The National Institute for Christian Education Research

NICER is a University Research Centre at Canterbury Christ Church University. It undertakes research to inform the contribution of faith to the public understanding of education, to aid the mission of church schools, universities and Christian education in communities, to develop and improve religion and worldview education, and to support the work of Christians in education and leaders in education. It uses qualitative, quantitative and mixed methods research approaches in that work, and has developed novel approaches to investigating school ethos, character and curriculum in Christian schooling.

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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.

Find out more at: **[www.nicer.org.uk/science-religion-encounters](http://www.nicer.org.uk/science-religion-encounters)**



**TEMPLETON WORLD**  
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**BIG QUESTIONS**  
*in* CLASSROOMS

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## Science Religion Encounters Toolkit 13

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# 1. WHAT ARE SCIENCE/RELIGION ENCOUNTERS AND HOW CAN I PREPARE FOR THEM?

An online survey was designed to explore beginning teachers' confidence and competence in planning for and responding to science/religion encounters in the classroom. The online survey was designed in response to comments in focus groups with 75 student teachers. There were 949 responses to the online survey. 324 primary teachers and student teachers completed over 50% of the survey and it is responses from this group that are analysed below.

Participants were asked to consider a number of topics which student teachers in the focus groups had raised as possible sites for science/religion encounters. The list of topics are set on Table 1 below. The topics highlighted in grey are those that were deemed appropriate for both secondary and primary teachers.

Table 1: Topics presented to online survey participants

Abortion	Blood transfusions	Experiences of Covid-19
Animal antibodies	Designer Babies	Mass vaccination
Big Bang	Euthanasia	Gender identity
Climate Change	Care for the environment	Conception of life, growth and change
Creation stories	Philosophy of science	Natural disasters
Death	Stem cell research	Human impact on the environment
Design argument for the existence of God	Evolution	Nutrition and diet

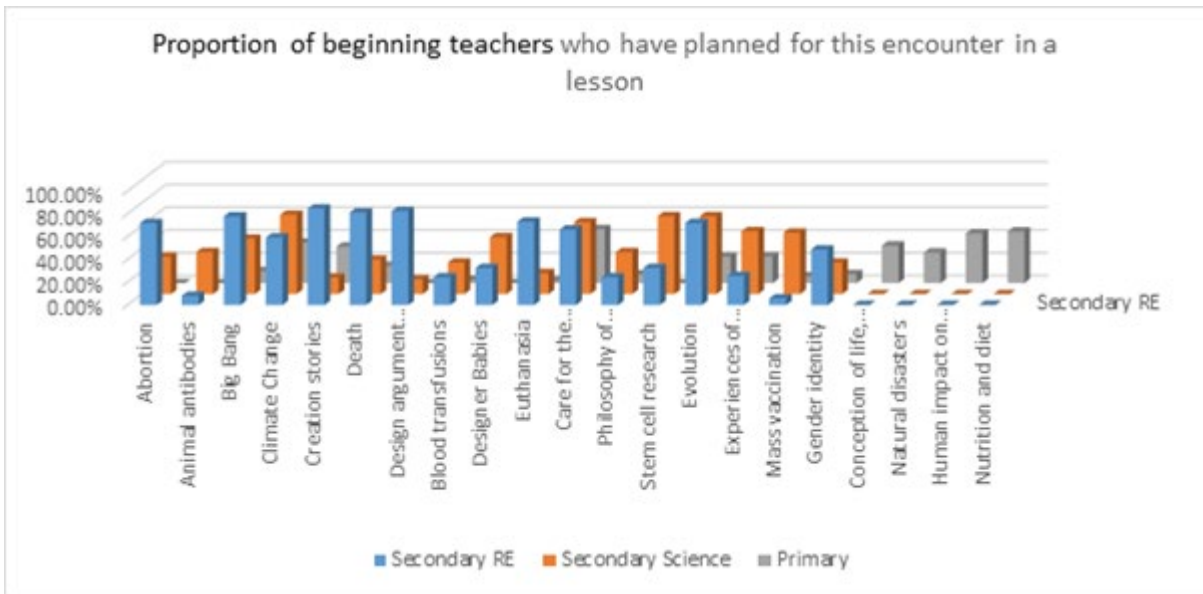
The data in this section considers only the beginning teachers, those in training of in their first two years post-qualification. For each of the topics, participants were asked to tick which ones they:

- Have planned for this encounter in a lesson;
- Have experienced pupils raising in a lesson;
- Would like to teach as a science/religion encounter in the future.

## *Have planned for this encounter in a lesson*

The proportions of participants who said "yes" they have planned for this encounter in a lesson are presented in Figure 1.

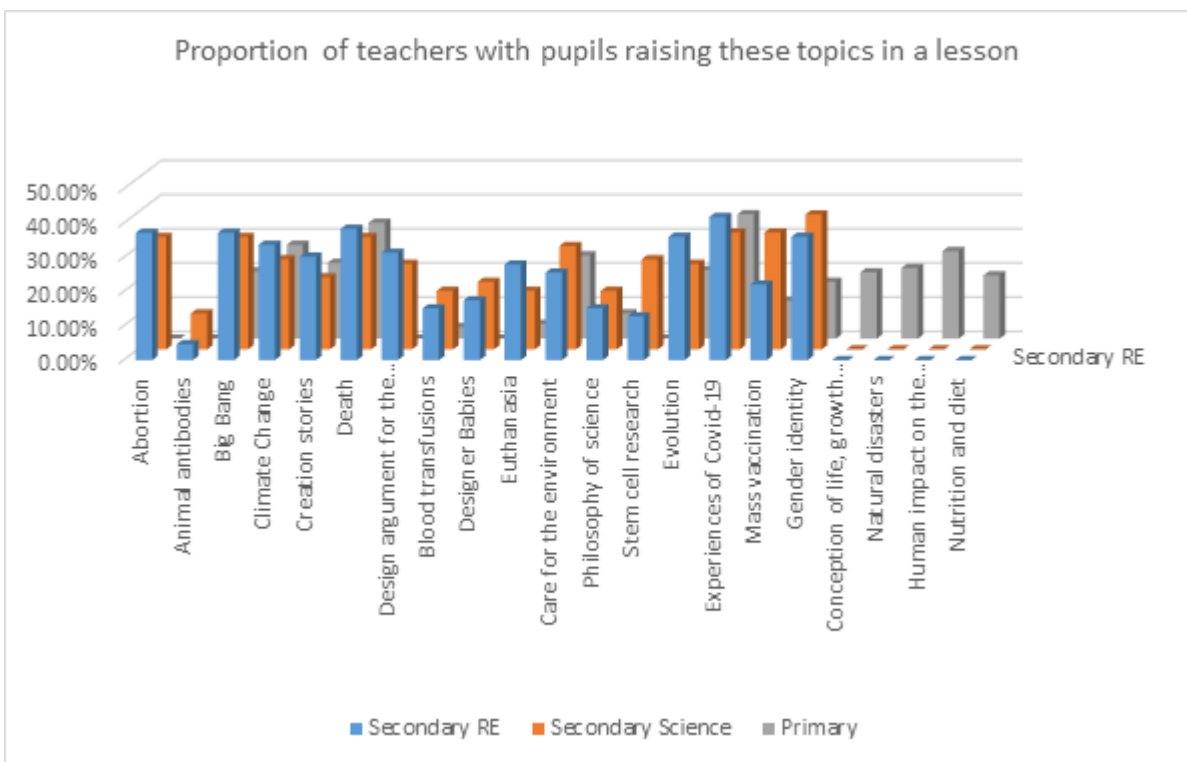
Figure 1: Proportion of beginning teachers who have planned for this encounter in a lesson



***Pupils raised this topic in a lesson***

The proportions of participants who said “yes” students raised this topic in a lesson are presented in Figure 2.

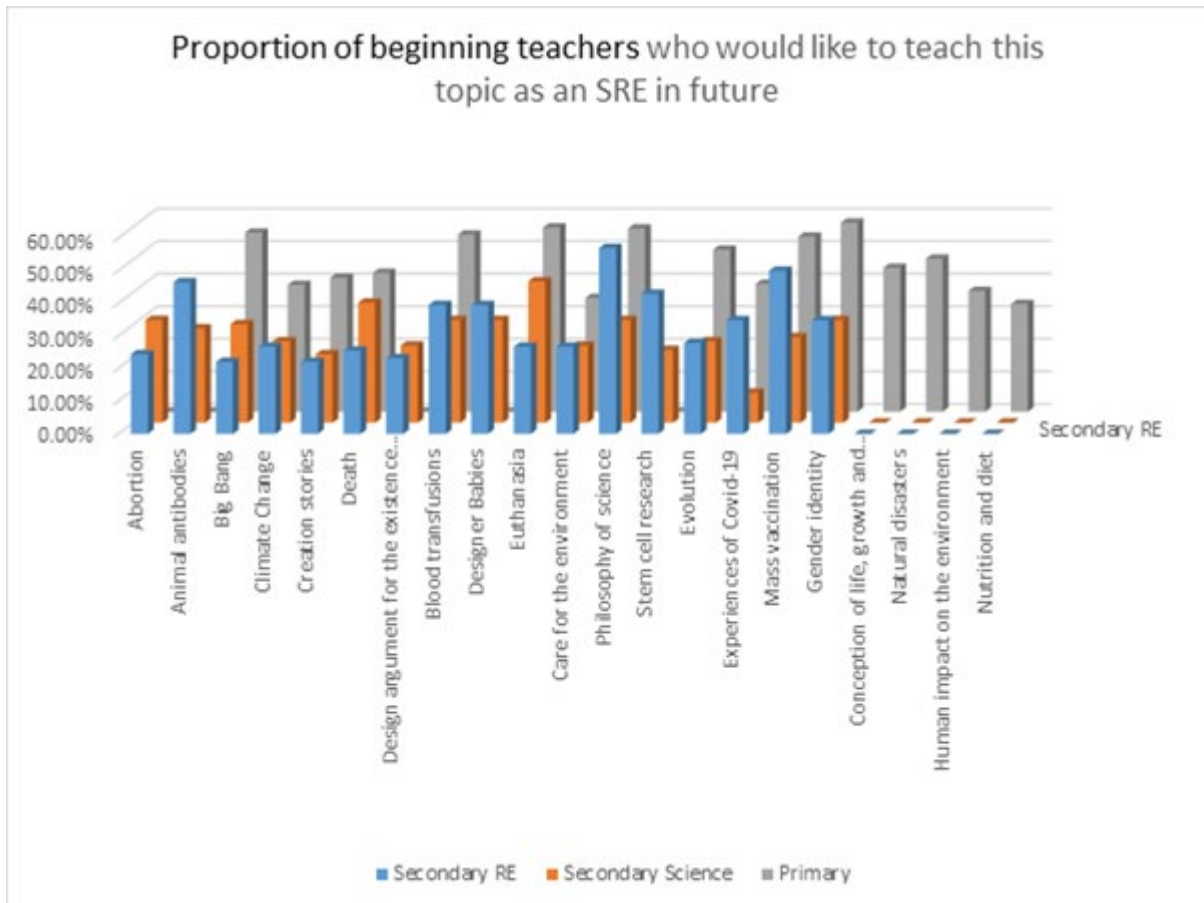
Figure 2: Proportion of teachers with pupils raising these topics in a lesson



### Would like to teach in future

The proportion of participants who said “yes” they would like to teach this as an SRE in the future are presented in Figure 3.

Figure 3: Proportion of beginning teachers who would like to teach this topic as an SRE in the future



## 2. WHAT IS THE PURPOSE OF RE ON THE SCHOOL CURRICULUM?

17 focus groups were held with 75 student teachers from 6 different universities. A semi-structured online survey, with over 70 items, was shared with ITE providers across England between late March 2021 and early June 2021. It was also disseminated to practising teachers through alumnae networks and social media. The survey was aimed at early career teachers of science and RE, defined as either in pre-service training or in their first two years post-qualification. 949 teachers accessed the survey. 486 early career teachers completed over 50% the survey (324 primary; 76 secondary science; 86 secondary RE).

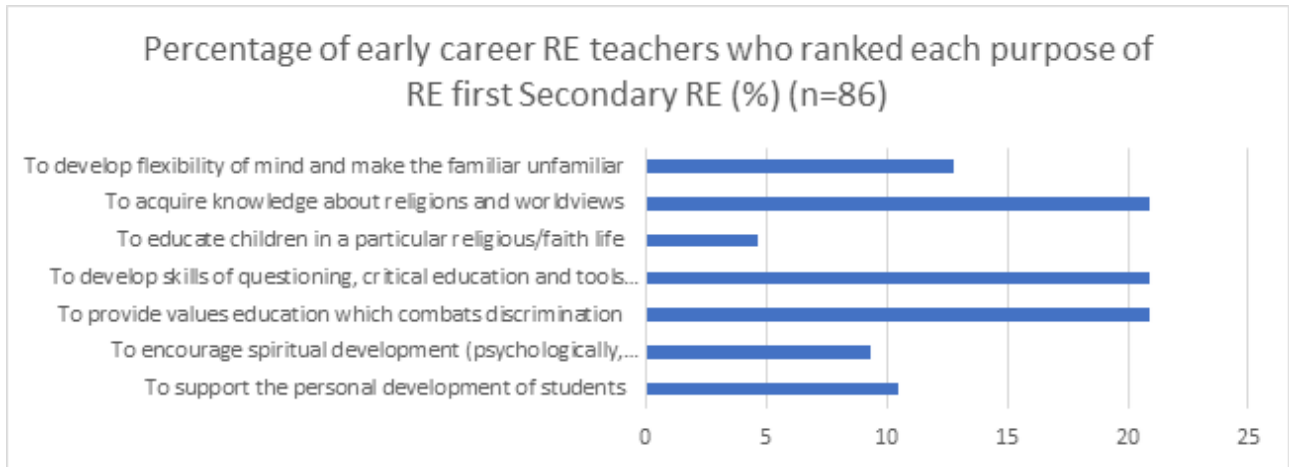
The tables and figures below reveal the relative importance of each defined purpose of RE for the secondary RE teachers. We can reach similar conclusions looking at the percentage of respondents who ranked each purpose first or looking at the average points gained by each purpose after transforming the first three ranks from each teacher into a points system.

Exploring first the prioritisation results shown in Table 1 and Figure 1, the majority of early career RE teachers (63%) prioritise three different purposes for the subject: values education, critical thinking and knowledge of religions and worldviews. The remaining RE teachers prioritised a second set of three purposes: personal development, spiritual development and flexibility of mind. The education of children in a particular faith/religion is given the least importance among this cohort, but those that prioritise it may work in faith schools.

Table 1: Percentage of early career teachers who ranked each RE purpose first

	Secondary RE (%) (n=86)
To support the personal development of students	10.47
To encourage spiritual development (psychologically, emotionally, aesthetically, culturally)	9.30
To provide values education which combats discrimination	20.93
To develop skills of questioning, critical education and tools for debate	20.93
To educate children in a particular religious/faith life	4.65
To acquire knowledge about religions and worldviews	20.93
To develop flexibility of mind and make the familiar unfamiliar	12.79

Figure 1: Percentage of early career teachers who ranked each purpose of RE first



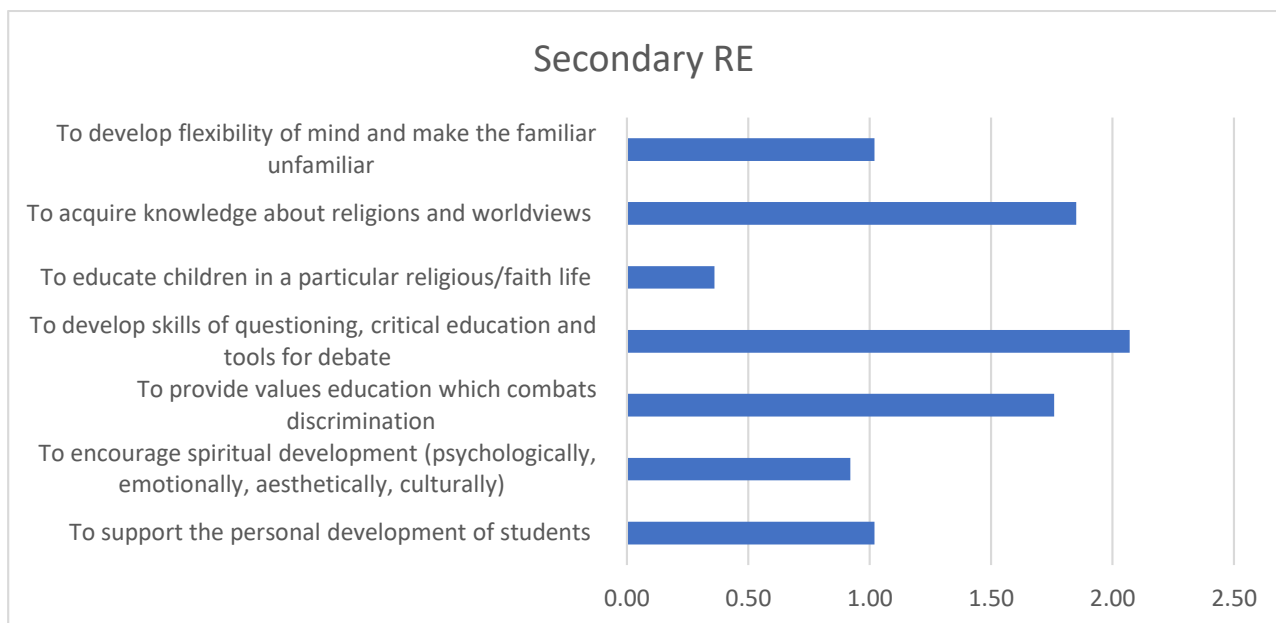
As RE is a complex subject, covering several disciplines, considering only the first-ranking purpose could give misleading results. The top three purposes given by the two sets of subject teachers were therefore also ranked. The results (set out in Table 2 and Figure 2) are, however, reassuringly similar to the first set of results. With this calculation, 'to develop skills of questioning, critical education and tools for debate' (2.07) draws ahead of 'knowledge about religions and worldviews' (1.85) and provision of 'values education which combats discrimination' (1.76) as a primary purpose of religious education.

Table 2: Early career teachers' views on purpose of RE with top three purposes ranked by points system (5 for first, 3 for second, 1 for third)

	Secondary RE (n= 86)
To support the personal development of students	<b>1.02</b>
To encourage spiritual development (psychologically, emotionally, aesthetically, culturally)	<b>0.92</b>
To provide values education which combats discrimination	<b>1.76</b>
To develop skills of questioning, critical education and tools for debate	<b>2.07</b>
To educate children in a particular religious/faith life	<b>0.36</b>
To acquire knowledge about religions and worldviews	<b>1.85</b>
To develop flexibility of mind and make the familiar unfamiliar	<b>1.02</b>



Figure 2: Early career teachers' views on purpose of RE with top three purposes ranked by points system (5 for first, 3 for second, 1 for third)



Data for more experienced teachers shows a few differences. Table 3 shows that more experienced teachers of religious education are more likely to prioritise acquiring 'knowledge about religion and worldviews' when asked to rank a single highest purpose. However, Table 4 shows, similarly to Table 2, that for more experienced teachers of religious education, taking the top three ranks brings 'to develop skills of questioning, critical education and tools for debate' out on top (2.38), with acquiring 'knowledge about religion and worldviews' in close second place (2.31). For experienced teachers of religious education, these two purposes are ranked far more often than any other purpose for the subject.

Table 3: Percentage of experienced teachers who ranked each purpose of RE first

	Secondary RE (%) (n=96)
To support the personal development of students	5.21
To encourage spiritual development (psychologically, emotionally, aesthetically, culturally)	12.50
To provide values education which combats discrimination	14.58
To develop skills of questioning, critical education and tools for debate	22.92
To educate children in a particular religious/faith life	5.21
To acquire knowledge about religions and worldviews	33.33
To develop flexibility of mind and make the familiar unfamiliar	6.25

Figure 3: Percentage of experienced teachers who ranked each purpose of RE first

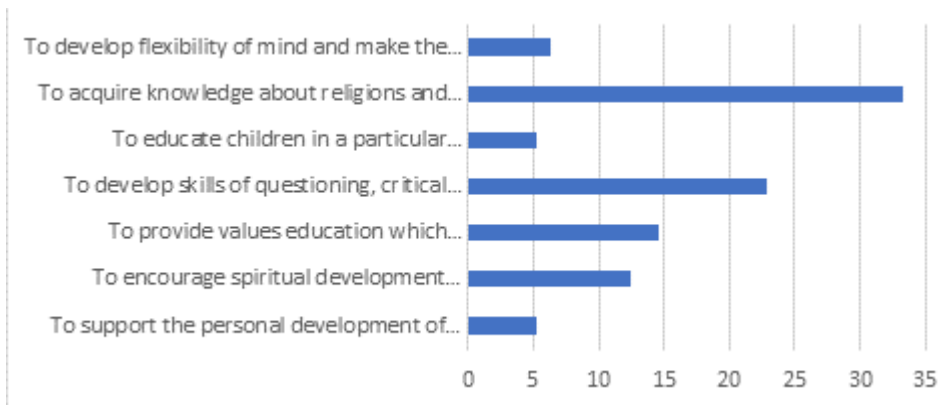
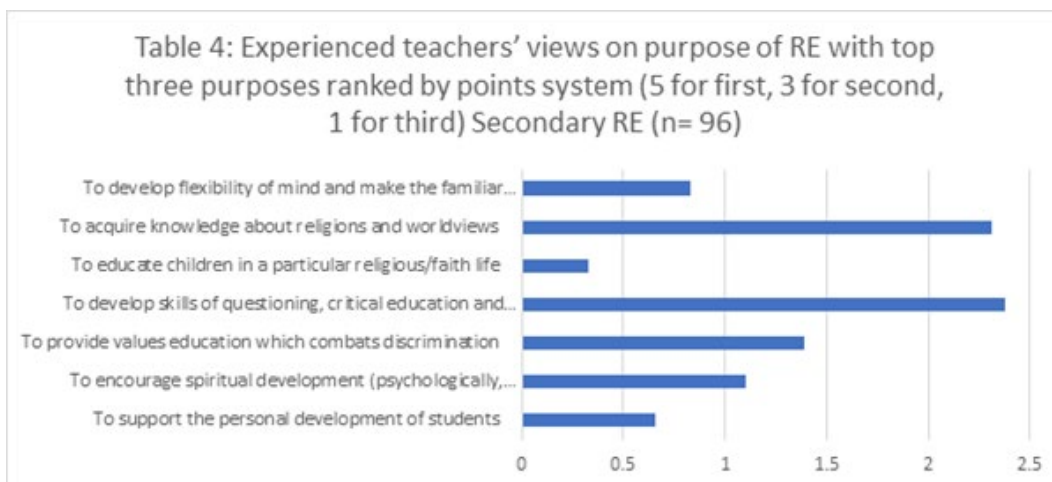


Table 4: Experienced teachers' views on purpose of RE with top three purposes ranked by points system (5 for first, 3 for second, 1 for third)

	Secondary RE (n= 96)
To support the personal development of students	<b>0.66</b>
To encourage spiritual development (psychologically, emotionally, aesthetically, culturally)	<b>1.10</b>
To provide values education which combats discrimination	<b>1.39</b>
To develop skills of questioning, critical education and tools for debate	<b>2.38</b>
To educate children in a particular religious/faith life	<b>0.33</b>
To acquire knowledge about religions and worldviews	<b>2.31</b>
To develop flexibility of mind and make the familiar unfamiliar	<b>0.83</b>

Figure 4: Experienced teachers' views on purpose of RE with top three purposes ranked by points system (5 for first, 3 for second, 1 for third)



### 3. SHARING THE PURPOSE OF SECONDARY RE IN THE SCHOOL

*17 focus groups were held with 75 student teachers from 6 different universities. A semi-structured online survey, with over 70 items, was shared with ITE providers across England between late March 2021 and early June 2021. It was also disseminated to practising teachers through alumnae networks and social media. The survey was aimed at early career teachers of science and RE, defined as either in pre-service training or in their first two years post-qualification. 949 teachers accessed the survey. 486 early career teachers completed over 50% the survey (324 primary; 76 secondary science; 86 secondary RE).*

*An extract from Woolley, M.C., Bowie, R. et al. (in review 2022) Science and RE teachers' perspectives on the purpose of RE on the secondary school curriculum in England*

In describing the purpose of RE teaching, the science teachers did not mention teaching about religions. This is in stark contrast with the findings for student RE teachers presented above. The student science teachers described RE as a subject for teaching values, sharing debates and opinions; a place for discussion of controversial or sensitive issues. Despite the small numbers of science teachers in the focus groups, teaching for tolerance was mentioned far more by science teachers than RE teachers as a purpose of RE. This student science teacher believed it was important for RE to focus on such fundamental values:

*I think it's really important for teaching those kind of like key fundamental values of like tolerance and being able to listen to others and being able to make appropriate debate, kind of thing, about different concepts and different ideas.*

Several of the student science teachers did not appear to have a precise language or knowledge to describe what happens in the RE classroom, perhaps confusing the purpose of the subject with Citizenship or showing the knowledge of 'Fundamental British Values' they may have received in teacher training:

*Well I think that for me, for RE it's maybe instilling... the British values about respecting culture ... upholding of the law and stuff like that. For me, I suppose RE is teaching aspects of that... about morality and stuff.*

There were several examples of science teachers admitting they were not sure what happened in RE lessons or referring back to their experience of RE when they were at school:

*And when I think back to when I was at school and I had RS lessons, it was more about what are people's views about abortion for example. Or animal testing or a load of those sorts of things.  
I'm not particularly knowledgeable myself of religion apart from the RE education that I had at school...at my school that I went to, the kind of RE was taught in a very debated manner so we did a lot of kind of for and against of different ideas and stuff like that.*

One science student teacher was able to draw an effective contrast between the two subjects, having observed an RE lesson in school, knowing he was going to take part in the focus group:

*But it mainly it's about providing knowledge... And the one lesson that I kind of stepped into for RE, it's very much more of a "What do you think?" as the core component of gaining that knowledge.*

This quotation is revealing for several reasons. First, in terms of the way knowledge is compared between the two subjects. There is an underestimation here of the substantive knowledge that can be included in religious education lessons (Ofsted, 2021; Kueh, 2017) and the validity of knowledge construction within RE. Although many religions may view values as having eternal significance, the responses from science teachers do not seem to suggest this definition of values education. Rather, values in these focus groups were associated with 'Fundamental British Values' such as tolerance and respect for others' opinions. It is possible that the limited conception of the other subject prevented the student teachers seeing where powerful connections might have been made between science and RE. Several of the science teachers were explicit that their subject was about facts and laws, but one contrasted this with RE which, to him, was about 'creatively making an argument'.

## 4. HOW CAN I TEACH ABOUT TRUTH IN A COMPLEX WORLD?

### Student teachers' comments on ways of knowing in science and RE

*17 focus groups were held with 75 student teachers from 6 different universities. In the focus groups, student teachers spoke explicitly about different ways of knowing in science and religion. These quotations could be useful in an RE or science ITE session discussing the relationship between the two subjects.*

*When I was teaching it [science and religion], I came across a thing that was basically saying that a Science and RE are asking the same question but in different ways. So RE is like why does the world function in this way, why we live in patterns. Whereas Science is answering how. And I think that's quite interesting like kind of asking the same question in slightly different ways. And often I find with Year 9 upwards they very much go to "the how's the most important" because that is what they can understand logically. So I think there is a really, I think they can work together to answer the questions about how the world works in the way it does.*

[Student RE teacher]

*I was just actually saying about building a relationship between the Science department and the Religion department. I had a discussion a couple of weeks ago, prior to lockdown happening where we talking about these educational issues that are in current science and they are pretty prolific. Space for example in Key Stage 3 and then you have IVF and your blood transfusions in Key Stage 4 and 5. And for me, I was saying, could the Science teachers and the RE teachers come together and identify these possible, I suppose, clashes, and work together on making resources. So that when these questions do come up that we have the resources available to be able to answer the questions and doing justice both for Science and for Religion as well.*

[Student science teacher]

*Both of them are trying to explain the meaning of life in different ways. And they try to also explain the purpose of life. While Science is trying to define the purpose of life, not using metaphysics, religion is using metaphysics. And obviously it is interesting the late development in-between these two because obviously we have at the moment, the issues trying to prove the existence of God and they're trying to prove that God does not exist. But in the end we are trying to focus in what is there, apart from humanity. And I think the link is just amazing and the conversations going on between the two are just fantastic. And that is challenging, not just religion, so Christian apologetics is actually growing thanks to this. So now we are articulate the religious beliefs in a better way, in a more powerful way, with really good resources behind, backing up what we're saying than before. And I think that is very important, thanks to Science.*

[Student RE teacher]

*Just for a difference, because I actually studied Religion up until university level. And even from my own experience as a student and even seeing it these days, in Science lessons it's very much like facts and laws and we try to build up a foundation on these scientific laws and it's very much like set in stone that it is this and that's the rule. In Religion lessons from what I've seen it's very much; a question is posed and there's a freedom in which ideas are readily shared and people have a discussion and there's an argument for and an argument against, if you get me, in classes.*  
[Student science teacher]

*When I think about Science I think the general attitude of the scientist as somebody who can also have this elastic way of thinking that you know, the idea, you have a theory and you hold that until other evidence comes along and then you get rid of it. You just discard it. Because more evidence is come to show something else. Rather than being committed to theories because you have an emotional attachment to them or a personal attachment to them. the evidence says this, so I'm going to hold this belief until other contrary evidence comes along... To transfer that word over to RE, I think the evidence is different. And possibly more flexible in that when you're talking about evidence in science we're talking about empirical evidence or mathematical evidence. And when we're talking about evidence in RE it might be, you might use for example, a contradiction in a way that your belief or practice goes against another system, say in human rights. And you realise this contradiction. You think OK, actually this challenges another system of beliefs that I belief in some aspect of human rights. And then when you become aware of that contradiction that is evidence against you. You know either the human rights beliefs have got to give or your practice has got to give. And it's that system of belief as something that should be coherent I think that can be used as evidence or people can talk about evidence in that way.*  
[Student RE teacher]

## 5. WHAT ROLE CAN DIFFERENT DISCIPLINARY KNOWLEDGES PLAY IN SHAPING RE?

A summary and elaboration of the discussion around 'Ways of Knowing' in the Ofsted Research Review: Religious Education (2021)

All quotes are taken from the full document which can be read here:

<https://www.gov.uk/government/publications/research-review-series-religious-education>

The Ofsted review for Religious Education unpacked the phrase 'Ways of knowing' as about being scholarly in RE, which means being scholarly about the substantive content and the disciplinary concepts. Education includes teaching pupils the (substantive) knowledge of things and the (disciplinary) knowledge of ways of finding things out.

Pupils explore the knowledge in a lesson in different ways:

- The disciplinary ways of finding out: well-established methods and processes and other tools of scholarship that are used to study and make sense of global and historical religion/non-religion
- The nature of disciplinary scholar debate: the types of conversation (or 'modes of enquiry' or 'scholarly discourses') that academic communities have about religion/non-religion

Ways of knowing mean attending to how things are known as well as what is known. This makes a difference to the tools used to explore that content and can affect the design of activities, tasks and the nature of progression a pupil is hoped to make.

Different disciplines have something to say in RE. Pupils could both learn about these different approaches and how useful they are, and also how to use these approaches themselves. This is important for several reasons, but one is cautionary:

*"If the curriculum is not explicit about 'ways of knowing', implicit assumptions (as well as a general lack of clarity) are passed on to pupils about how they ought to approach future RE content. This links to the important question of 'what kind of neutrality' is required in non-confessional RE [given that] a position of absolute neutrality when studying religion/non-religion is considered untenable"*

In other words, there is a risk not only of distorting the representation of religion but also imparting an unreasonable presumption of some kind of view from nowhere. The presenting of 'this is how it is' without question. The social sciences arose in part as a rejection to methods of knowledge construction that had been advocated through religious authority and religious scholarship, including rejecting, for instance, things like revelation. Scholars writing in the mystical traditions or religion use language poetically, metaphorically with expressions of ambiguity, rather than the more positivistic language of the natural sciences and analytical philosophy.

Zen thinking has a strong tradition of embracing contradiction in the way of making sense that it advocates. The review recommends that leaders and teachers may plan for pupils to learn:

- “how knowledge came about (for example, who constructed the knowledge or how it might have been formed from academic disciplines)
- the status of claims (for example, how accurate a generalisation about religion might be)
- the difference between conceptions and misconceptions (for example, whether the term ‘believer’ is an appropriate term for all adherents and practitioners of different traditions)
- the type of method that may have been used to derive that knowledge and the suitability of methods (for example, the strengths and limitations of interview methods for portions of curriculum content)”

In Ofsted’s view of a knowledge rich RE curriculum, it is not enough that pupils learn things, the substantive knowledge of what happens on Hajj or the domestic religious life of Hindus. Also pupils are expected to know about how that stuff came to be established, organised, classified and analysed and evaluated.

### **Knowing about scholarship, disciplines and knowledge production**

Classically, religion is approached through three groups of disciplines: the most recent being the social sciences, the most ancient being theological and philosophical. Within these groups there are intellectual conversations taking place that are characterised by the disciplines. What might it mean for pupils to encounter what it is to think like a social scientist about religion, or think like a theologian or think like a philosopher?

1. When asking what is known about belief, a social scientist might conduct surveys of people using techniques that try to make sense of the different beliefs people has. This involves skills in conceptual clarity in the language used, techniques of asking questions and eliciting meaningful, reliable answers. Pupils could be introduced to survey data of populations about their beliefs, or an interview with someone about their belief. They could be taught how to use such data in a discussion and how they might respond to it or ask questions of how it has been gathered.
2. Pupils might explore the how of theological reflection, relating ideas in sacred texts that have developed into living conversations among the faithful, in history and the present time. For example, how the Titles of Jesus found in the Bible texts informed debates in the Early Church around the nature of Jesus, how answers to those debates shaped religious thought and latterly how this is expressed in credal statements and contemporary religious practices. This would mean introducing pupils to the process of theological reflection, asking questions of sacred text, examining different responses to those texts and contextualising texts in ancient and modern religious life.
3. A third form of disciplinary how offered through philosophical tools that investigate meaning. How philosophers ask ultimate questions and seek to find answers using a process of reasoning and conceptual clarification, seeking out inconsistencies, reliable arguments, and counter arguments.



These are general disciplinary categories that themselves can be divided. Theologians divide into groups such as those focussed on Biblical interpretation, historical theology or pastoral theology for instance. Likewise, Philosophers can be from the analytic school of philosophy, continental philosophy, Chinese or east Asian philosophies, for instance. And whilst some social scientist work on improve statistical analysis, others are interested in ethnography, others social theory for instance.

Therefore, the possible tools and methods that pupils could learn about in a lesson include:

- tools for interpreting texts
- tools for exploring customs, habits and ways of living (ethnography)
- archaeological procedures
- methods in historical reconstruction
- participant observation
- in-depth interviews
- analysis of relevant data
- conceptual analysis
- reflective analysis

Ofsted write that this kind of knowledge develops pupils' awareness that different methods and processes are useful in different ways and that their awareness that

*“conversations about religion and non-religion generally carry within them certain assumptions, link to methods and processes and contain certain criteria about what is considered valuable.”*

Ofsted state that “to meet the professional standards of teachers, teachers must promote the value of scholarship” and so curriculum design should: value scholarship, include how the knowledge was constructed; explore how accurate, tentative or reliable representations of religious and non-religious traditions are; have expectations of what pupils to learn about how to construct new knowledge, and evaluate existing knowledge, in trustworthy ways. Pupils should therefore be learning things like:

- What happens in sacred text interpretation?
- What does theological reflection look like?
- What constitutes a strong philosophical argument?
- What is a rigorous assessment of current religious belief and practice?

Ofsted state that “High-quality RE curriculums build forms of knowledge that give pupils the capacity to think about the status of the content.” In being more focussed on the disciplinary knowledge lessons can more sharply focus on the kind of analysis taking place when the focus of analysis is, for instance, a belief, a religious text or a philosophical argument. The kind of criticality is shaped by the kind of analysis so subject leaders should plan ways of learning that are specific to the content.

For example, curricula that refer to and use sacred texts such as the Bible should consider the interpretative (hermeneutical) tools for texts in the RE classroom. Pupils would learn the tools of interpretation that are specific to the substantive content (parts of the sacred text), seeing layers of meaning in texts that interpreters find significant. This grows their capacity to become less reliant on teachers delivery of a meaning and brings them closer to the kind of analysis that both Biblical scholars and Christians participating in Bible Study today practice.

*“High-quality curriculums in which pupils learn a range of ‘ways of knowing’ can help prevent over-simplifying or stereotyping religion. Recognising that there can be different ‘ways of knowing’ brings to light a variety of perspectives, positions and voices. This may also help overcome misconceptions that later ideas, practices and perspectives in some religious traditions are necessarily deviations from an original pure tradition.”*

## 6. HOW CAN I FOSTER COLLABORATION BETWEEN THE RE AND SCIENCE DEPARTMENTS IN MY SCHOOL?

### Examples of collaboration between RE and science departments

*Focus groups were carried out with 75 student teachers. Some were able to describe collaborations between science and RE departments that existed in their placement schools and the effect that had on them as beginning RE teachers. The extracts below provide some of these examples.*

I know my school, when they're teaching about creation, they plan and work with the Science department so that it's being covered at the same time. So the students are able to get a more in depth understanding of it than maybe what we'd be able to deliver for them as RE specialists. So they get the more scientific point of view and then we get to teach them the RE side... I think I definitely have been asked some quite tricky science questions and I'm just like "I have no idea". But I think for me, I'm just quite honest with my students and I'm like "Look, I can help you only so much when it comes to the science part but take these questions to your next Science lesson and build on it and then come and tell me about it". And I try and get away with it that way.

[Student RE teacher]

We did creation. And we aimed it at Year 8 and it was actually a lot more helpful because obviously when discussing the planning, by this point I had already taught a creation lesson to Year 10. But it was really helpful because it kind of clarified those misconceptions that I had and made me feel a bit more secure in my knowledge of the Big Bang for example because I didn't know a lot about it. Only what I had read on the slides, from what I had taught, like a little bit of extra research I had done. But there's quite a few scientific words out there when you research it. And I don't know what they mean. And so it was actually really helpful working with this [science] teacher. However, she would never have taught that lesson in the same I don't think, to science as I would for RE. I think it's a lot easier to apply the science to RE lessons but not RE to science lessons.

[student RE teacher]

I teach 'A' Level as well, so I've had the opportunity to teach the teleological and cosmological arguments. So Science does creep in there. GCSE, when we're looking at creation, we will look at natural selection and the Big Bang theory and compare them. But also at my school I didn't teach this, but I saw it being taught, when they look at Catholic scientists to show how actually some of the great scientific thoughts developed from extremely religious people. And these people are showing you that they don't have to be opposed and that actually it can make sense as one. [student RE teacher]

## Knowledge of religious scientists

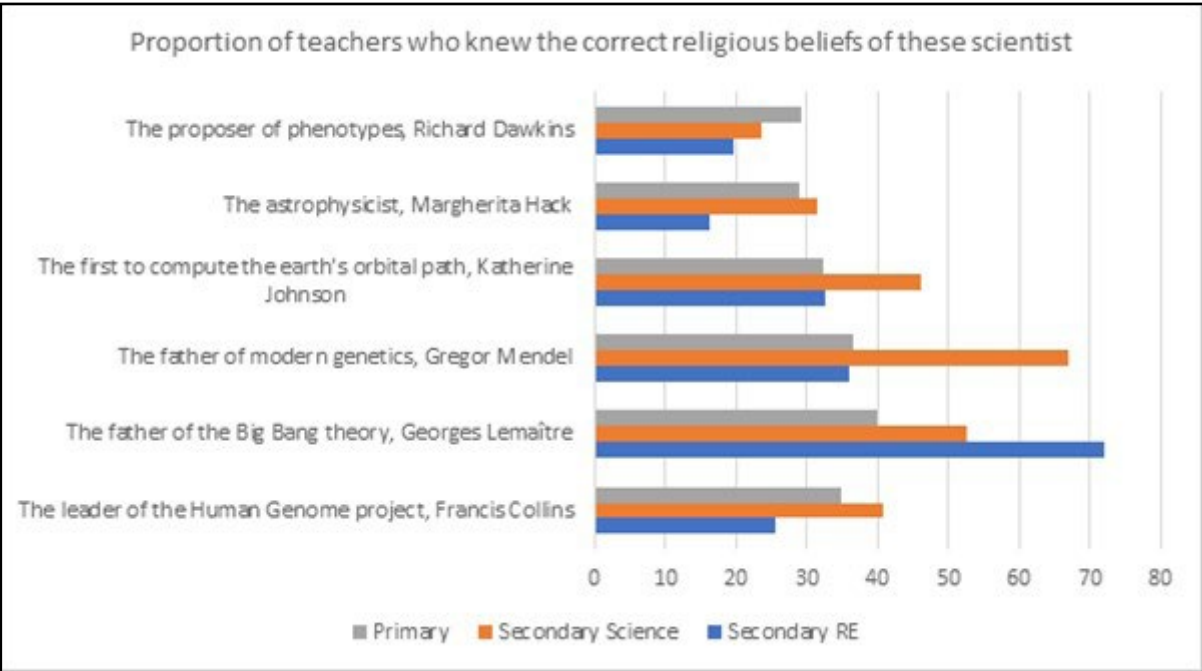
One finding from our research project was that science teachers are more likely than RE teachers to know when scientists are religious. A collaborative project on religious scientists, or simple dialogue between teachers to encourage being explicit about religious scientists in both subjects, could help to break down false dichotomies between religion and science in the minds of pupils.

RE misconceptions were also measured by asking participants to indicate which of six prominent scientists were, in fact, and counter-stereotypically, religious. The first four listed in Table 32 are/were famously religious while the last two are/were not. The results showed that science teachers have more accurate knowledge of the religious beliefs of these scientists, apart from Georges Lemaître, about whom secondary RE teachers were more accurate. This results shows less misconception in secondary science teachers than in RE teachers. It could be argued that the beginning science teachers simply know their scientists better than the beginning RE teachers.

*Table 32: Percentage of teachers of RE and science who knew the correct religious beliefs of these scientists*

Which of these are/were religious?	Secondary RE	Secondary Science
The leader of the Human Genome project, Francis Collins	25.6	40.8
The father of the Big Bang theory, Georges Lemaître	72.1	52.6
The father of modern genetics, Gregor Mendel	36	67.1
The first to compute the earth's orbital path, Katherine Johnson	32.6	46.1
The astrophysicist, Margherita Hack	16.3	31.6
The proposer of phenotypes, Richard Dawkins	19.8	23.7

Figure 23: Percentage of teachers who knew the correct religious beliefs of these scientists



## 7. HOW CAN AN INTERDISCIPLINARY ITE DAY SUPPORT STUDENT TEACHERS OF RE AND SCIENCE IN PLANNING AND COLLABORATION?

Extract from a presentation given at BERA 2021  
by Dr Caroline Thomas and Dr Mary Woolley

One university in our selection of 6 ran a specific joint session for PGCE science and RE students. We interviewed PGCE students there across two different cohorts.

Students were unanimous that it was a really important session. The session was set up as group work throughout the day and one thing the students commented on was the imbalance in numbers – some groups 4:1 science: RE, difficult to avoid when science ITE tends to recruit more successfully than RE ITE.

Groups were given a topic/ controversial issue and tasked to write a lesson plan. One issue raised by the RE students, in talking about the session, was that some of the student science teachers couldn't see the point of incorporating any talk of religion into their lessons

*[The science teachers] struggled to see the purpose or the role of incorporating religion into their teaching strategy. I mean that could be really off the mark but just from the group I was with that just seem to be the case. (student RE teacher)*

*It was the same for my group... I feel like they seemed a lot more set in their views in the Science bit than like we were. And I feel like we sort of, yes, saw the benefits of bringing their subjects into ours rather than them bringing ours into theirs. They didn't really seem to have a lot of knowledge about ethics at all. (student RE teacher)*

There are challenges apparent here; the possibility that the science curriculum, as a National Curriculum subject, is less flexible. Science is a compulsory GCSE in most schools; it's high stakes which could lead to less room for experimentation. RE is likely to have much less curriculum time in non-faith schools, but in exploring issues like evolution and the Big Bang, science is clearly a part of what is taught. Our research shows that religious views are being represented in some science lessons, but nuances of the varieties of beliefs within certain religions could be missing.

Some of the groups of students had a more positive experience:

*The group that I had were actually quite the opposite. They very much wanted to talk to me about religion and how they thought that it was really important as part of science. So we got set the activity and we didn't really do it because*

*we ended up just talking about religion and science for the whole time. But they were asking me loads of questions and they were saying how they think it's important that the two crossed over [3 RE PGCE students]*

These experiences certainly highlight the need to create opportunities for dialogue across subject or disciplinary boundaries.

When interviewed, the science student teachers agreed with the RE teachers that it was an important session, but perhaps didn't approach it with the same mindset.

*The RE student was particularly, she said that she was religious and had come from a religious family. However she had quite a lot of scientific views. So she kind of spoke about how, in her opinion, different scientific views could interlink with some things in RE... So she said she was open minded to different outcomes which was fantastic. [Science PGCE student]*

There seems an element of surprise here, from the science teacher, that religious belief and scientific views might be compatible. One wonders, what's fantastic here? That she's not too religious? That she can agree with him?

*I mean for me I don't think it would change my view personally because my view would be particularly kind of like the science and what I've seen... [Science PGCE student]*

There's something here about not wanting to be changed, but also something about epistemology. This student believes in evidence and what he's seen. Does he need to be introduced to the idea that there might be limitations to science, or other ways of knowing?

For one science student teacher, who had talked about his personal religious beliefs, he felt a fear of offending

*I personally was very wary of challenging someone's beliefs on a really fundamental level. Obviously it was partially what it was there for and partially to understand how they teach and how we teach and bring it all together. But it was quite nerve racking. [Science PGCE student]*

In conclusion, student teachers had vastly different experiences of this inter-disciplinary ITE day. There is little doubt that it was an important experience for all. What students got from the day might have depended on their starting point, their worldview and the group they were placed in. Moving groups during the day could have been a way forward for those who had particularly tricky conversations. For all the students, however, this opportunity for rich dialogue across the subject boundaries seemed to be a new experience and one they would remember.

This results shows less misconception in secondary science teachers than in RE teachers. It could be argued that the beginning science teachers simply know their scientists better than the beginning RE teachers.

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