# Spiritual, Moral, Social and Cultural delivery in Science

| Aims of Spiritual Development | Spiritual Development in Science |
|---|---|
| Explore beliefs and experience; respect faiths, feelings and values; enjoy learning about oneself, others and the surrounding world; use imagination and creativity; be reflective. | Sometimes science and spiritual ideas do cause conflict but in a modern society it is important to understand why these conflicts arise so we can respect the views of others and move forward. It is also seen more often that science is able to stand alongside the spiritual beliefs of many. This is looked at often from a neutral stand point within science lessons. |

Examples of good practice:

- Reproduction (Y7) - Focus on people's beliefs around contraception and why people may choose not to use it. Considered from a health point of view as well as religious / belief point of view.
- IVF and fertility treatment - Focus on the ethics behind IVF and use informed decisions on peoples life situations to decide / debate which couples should be given the limited availability of IVF.
- Genetic Engineering and cloning - Use understanding of cloning techniques to evaluate whether embryo cloning should be allowed and to what level. Often carried out in debate form although some groups will complete extra research around the topic
- MMR Vaccines - Look at how people's beliefs can be influenced by others and how science is needed to sometimes demonstrate fact over people's opinions.

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| Aims of Moral Development | Moral Development in Science |
|---|---|
| Recognise right and wrong; respect the law; understand consequences; investigate moral and ethical issues; offer reasoned views. | Our understanding of Science has allowed us to develop technology we couldn't have imagined 50 years ago. Now however, we must start deciding if we should we do all the scientific activities we are able to or morally should we decide not to. This can be as simple as should we test medicines for humans that could save lives on animals causing them cruelty? It could be as complex as should we allow somatic or germ line cell therapy. Moral development is a vital part of any scientist's development. Students will need to develop a good understanding of it to firstly pass exams which always comprise of ethical questions but more importantly to become a good rounded scientist.<br><br>Understanding the consequences of our actions.<br>This is covered throughout the science curriculum in detail on a personal level:<br>What are the consequences of my actions on myself and others?<br>It is also covered on a species level:<br>What are the consequences of our actions on the world around us?<br>What are the consequences of my actions on myself and others? |

Examples of good practice:

- Teenage pregnancy and the consequences of this and underage sex is looked at and discussed.
- Diet and exercise and consequences of this not being balanced is looked at in depth
- Students study the importance of fossil fuels to human society and the impact their usage is having. This is probably the first real time that students start focussing on particular aspects of pollution in the world around us
- Students consider the impact of multiple chemical and industrial processes on the environment - including the combustion of hydrocarbons and the impacts of global warming and acid rain on the environment. The production of ammonia during the Haber process and usage of excessive fertilisers on food chains are considered in detail

# Spiritual, Moral, Social and Cultural delivery in Science

| Aims of Social Development | Social Development in Science |
|---|---|
| Use a range of social skills; participate in the local community; appreciate diverse viewpoints; participate, volunteer and cooperate; resolve conflict; engage with the ***'British values***' of democracy, the rule of law, liberty, respect and tolerance. | Science is changing our society. The life expectancy is getting larger, people are driving more efficient cars, more and more people are putting solar panels on their rooftops. Our society has become dependent on scientific developments which we could not have foreseen 50 years ago but also our lives are likely to change significantly in the future because of our reckless damaging activities to the environment as a human society. Students must consider their impact on the world around them and start to look at what we can do to help the next generation have a habitable planet.<br>Students need to develop their empathy and tolerance towards different viewpoints understanding how science really is encapsulated by Newton when he says he was " standing on the shoulders of giants" |

Examples of good practice:

- STEM/Science Club
- Trips - In action Lectures, Science Live lecture Trips, Hull University Science Week, Royal Society London
- Science Week – In house topical standalone lessons discussing science in the modern world and news
- Group work
- Topics which develop individuals understanding of society:
- Fertilisation and child development –KS3 Biology, Lifestyle – KS3, KS4 & KS5 Biology, Diet – KS3, KS4 & KS5 Biology, Eco – inc Green Party and other Political Views – KS4, Energy Efficiency – KS4, Global Warming – KS4, Alternative fuels – KS4, Scientists in focus – development of atomic model – KS3 and KS4 Biology, Crude oil importance/dependence – KS3 and KS4 Chemistry, Evolution – KS3 and KS4 Biology
- Use of mobile phones – KS4 Physics
- Government's role in regulations and legislation – KS4 Biology and Chemistry

# Spiritual, Moral, Social and Cultural delivery in Science

| Aims of Cultural Development | Cultural Development in Science |
|---|---|
| Appreciate cultural influences; appreciate the role of Britain's parliamentary system; participate in culture opportunities; understand, accept, respect and celebrate diversity. | Scientific development comes from all across the world, from people of all backgrounds and cultures. Some of science's most important discoveries have come from other parts of the world and it's important for students to understand this as many believe that progress comes largely from the UK or America. It is also important to understand how the different cultures around the world can have different impacts on the planet and what impact more economically developed countries have on poorer areas. This will also be vital into the future as we need to monitor the impact of quickly developing cultures around the world on our environment<br><br>Students are given the opportunity to discuss and learn about all aspects of famous scientists lives not just the discovery that is relevant to the course. |

Examples of good practice:

- Development of scientific ideas- KS3,KS4 & KS5 Science
- Speciation – KS4 & KS5 Biology
- Evolution – KS4 & KS5 Biology
  The Big Bang Theory – KS4
- The shape and composition of the Solar System – KS3 & KS4
- Variation in different cultures – KS3 and KS4 Biology
- Climate change – KS3 and KS4 Physics
- Culture collaboration periodic table – KS3 and KS4 Chemistry
- Earth' atmosphere – KS3 and KS4 Chemistry
- Importance of collaboration in Science