



Oxford Spires Academy

Science

Our ambition as a science team at OSA is to inspire a love and curiosity for science learning not just inside but also outside the classroom. We aim to equip students with analytical and problem solving skills using both theory and hands-on practical work as well as an enthusiasm and thirst for scientific knowledge. This is enabled by our specialist teaching team and the creative teaching strategies we endeavour to deliver through our schemes of learning.

We are a very proud of the science GCSE and A-level results students achieve and the progress they make across all three disciplines (Biology, Chemistry and Physics) during their time at OSA. Our dedication to robust assessment, development of skills as well as the delivery of scientific knowledge has allowed us to be consistently one of the highest achieving faculties in the school.

KS3

Our KS3 curriculum has been written to promote inquiry and a love for the subject by including a large amount of investigation and practical science. Our main focus is therefore in developing practical and investigatory skills within the context of learning about different topics across Biology, Chemistry and Physics.

The order of the topics has been chosen to link with the order of topics in KS4 in order so pupils don't repeat topics too soon or with too much of a gap when they return to study them in greater detail. Some of the topics we cover during KS3 include: forces, energy, electricity and magnetism, plants and ecology, cells, genetics, mixtures and materials, elements and chemical reactions.

KS4

Our curriculum in KS4 is designed to promote independent thought, memory and recall. In each module we have a revision skills and recall lessons. The purpose of this is to promote the importance of recall in science given the large amount of content there is to learn across the three disciplines and also to explicitly teach the pupils methods for committing information and ideas to memory. We aim to teach lessons that engage pupils in the science content and that pupils find enjoyable and rewarding. We also aim to build strong and positive rapport with the pupils.

We follow the AQA specification and students will be assigned one of two course routes at the start of KS4 (Year 10): Combined Science Trilogy (equivalent of 2 GCSE grades) or Separate Sciences (a separate GCSE in each: Biology, Chemistry and Physics). Both routes allow students to achieve top grades and pursue science A-level courses if that is their intention.

There is a huge range of topics at GCSE across both courses with something to suit the abilities and interest of all students including: infection and response, bioenergetics, variation and evolution, chemical analysis, atomic structure and the periodic table, organic chemistry, waves, electromagnetism and space physics.

KS5

We are pleased to offer 4 popular A-level science courses: Biology, Chemistry, Physics and Psychology. Our A-level provision aims to really stretch and challenge students to build on the fundamental concepts from GCSE and apply them to much wider contexts applicable in everyday life or further scientific study. We have a large focus on development of analytical and practical skills, as well as promoting independence outside of the classroom and resilience as key components of successful A-level study.

Our A-level science students in the past have shown high aspirations and exceptional attainment to apply and take up places to study at Russell Group Universities, pursuing a range of subjects such as ; Medicine, Engineering, Pharmacology, Biomedical Sciences, Biochemistry, Physics, Child Psychology, Computer Sciences and Economics.



“Science lessons include logical thinking and problem solving, which is enjoyable and the topics can often be related to examples in everyday life. It also sometimes explains small curiosities about life in general!”

“Science is my favourite subject as I enjoy becoming educated in weird and amazing knowledge. Science helps me see things differently and intrigues me. Thank you to all the science teachers in Oxford Spires Academy who helped me make progress. You’re all amazing!”

“I like science, because it makes me think about some of the human and world problems like deforestation and global warming. It also gives me a wider understanding of why something is happening in the way it is like forces, waves and chemicals”

“I find all the sciences engaging and interesting and never a lesson without learning something new!”

Examples of Students Work

Are pharmaceutical companies conning us?

Drug testing:

- 1) The drugs are tested on human cells in a lab or computer models.
- 2) They are then tested on animals, monitoring side effects.
- 3) Then it moves to clinical trials on healthy people.
- 4) Then finally they are tested on those with the illness to ensure they work.

The placebo effect:

It explores the 'relationship between our bodies and our minds', simply by replacing the drug with a placebo sugar pill and then observing the effect it may have on healing.

The ethics behind it all:

- In the UK it's the 2nd most profitable activity, spending £7.6 a year.
- Globally the industry is worth £150b.
- Most companies would rather maximise profits than care for those in less developed countries, claiming they need the money for 'further research'. (However in the US they only spend 14% on R&D)
- Drugs are re-patented by other companies due to slight differences in order to keep making money.
- Within the first 10 years that a drug has been released for it cannot be copied, therefore a consistent rise in price is seen.

Tricks played for a positive trial result:

- Assume correlation always equals causation.
- If treatment group starts better than placebo group love it like that.
- Ignore dropouts – statistically more likely to have done badly.
- Clean up the data – get rid of anomalies.
- If difference in data becomes significant delete the data.

Dependence by Type of Pharmaceutical Marketing (2012)

In my opinion I believe the industry is conning us in ways that persuade us to pay for 'research' into something that isn't needed instead of focusing the money on areas that can help with developing new drugs that may not be as readily available.

References:
<http://www.zenon.com.br/pt-br/industry/industry>
<http://www.bbc.com/news/health-12144444>

OSA: LET'S TAKE ACTION!

Problem?
 The cleaners have complained that there is one more food particle being left in the bins, and not always in the bins targeted!

Solutions -
 These packages is a huge issue when it is done with wrong, the best 20% of our waste is not in the bins. It's not just about the bins, it's about the way we use them. We need to be more sustainable! So long as we can do it, the school can use reusable lunch boxes! Companies, especially for people who use plastic bags, should be encouraged to use more sustainable materials for their products to find a good alternative!

Let's see the bin and what we could do it but...
 Recycling bins and our recycling and the way we use them can help reduce the amount of waste we produce. We can help people who use plastic bags, which are not really good for the environment. We can help people who use plastic bags, which are not really good for the environment. We can help people who use plastic bags, which are not really good for the environment.

