



# Learning to Fly in Science

These are the skills and habits which outstanding students of science develop. Do as many of these as possible to become more independent in the subject and to develop the skills and knowledge needed to attain 8/9 at GCSE and A\* at A Level. **Remember, whilst your teachers are here to support your progression, to achieve your very best, you should broaden your science experience outside the classroom.**

## In your lessons

- Get involved and have a go. Don't be afraid of making mistakes. Scientists learn just as much from their experiments that don't go as planned and from results which don't fit a pattern.
- Ask and answer questions in lessons to develop your science literacy and address misconceptions. Think 'how can I make that even better'. Develop your answers and include full use of scientific vocabulary and explanations.
- Listen carefully to other students and the teacher, as this will help. Reflect on other students' answers and think about how you would develop it.
- Think critically about your own work and find ways to improve it.
- Think about ways in which new knowledge you encounter in the lesson fits in with what you already know. Science is made up of many interlinking concepts and ideas.
- Make use of your checklists to ensure that you are progressing. At KS4, look at how content and understanding develops between grades 6 to 8.

## Between your lessons

Ensure that all your classwork is complete.

Look back over your notes and activities from the last lesson. Doing this 'little and often' soon adds up.

Read ahead to familiarise yourself with upcoming topics.

Try all work on your own, go to see your teacher to ask for clarification and guidance if needed.

When revising, rather than reading passively through notes, instead make revision cards, vocabulary lists and mind maps. Then try exam questions or the end of chapter questions in your textbook.

## Try using three colours of pen when you answer exam style questions.

1. Use the first colour by yourself.
2. Add to your answer using a second colour with the help of the textbook or a website.
3. Check your answer with the mark scheme and add to your answer with a third colour.

You now just need to revise the second colour and learn the third colour.

### **Beyond your lessons**

Try to engage in science outside the classroom in a way that interests you. You might try: -

Listening to podcasts from the BBC <https://www.bbc.co.uk/podcasts/category/scienceandnature>  
'The Life Scientific' is a superb show to listen to.

Attending free lectures at universities (e.g. UCL Friday lecture [Science Centre Lectures | UCL Department of Physics and Astronomy - UCL – University College London](#) or Gresham College lectures [Lecture Series 2023-24 | Gresham College](#)).

Watching documentaries e.g. BBC Horizon specials. Use the BBC 's IPlayer to see a selection of science and nature shows.

Reading a newspaper. Looking for Science developments. Download the BBC News App on your phone and add all the science topics to 'My News' so they come up automatically.

Reading a science magazine e.g. New Scientist, BBC Focus, Catalyst. You don't need to read them every week or month, or from cover to cover. Dip in and out when you feel like it.

Visiting museums. We are so lucky to have so many nearby in London e.g. Science Museum, Natural History Museum, Wellcome Collection, Crick Institute, Hunterian Museum, Down House. Look online to see when they have specific exhibitions on.

Talking to your friends and family about science. Start a debate. Discuss an issue.

Keeping a log of scientific key terms, you encounter and look up their definitions.

In Science, you may find some topics more difficult than others, but by attempting some of these ideas listed you might find that it gets more interesting or easier.

## **In Biology**

- Carry out OPAL surveys in your local area [www.opalexplornature.org](http://www.opalexplornature.org) (all years)
- Join your local Wildlife Trust and carry out conservation work [www.wildlifetrusts.org](http://www.wildlifetrusts.org) (all years).
- Join Biology club in B3 on Thursday lunchtimes.
- Take part in national competitions such as:

- 1) British Biology Olympiad (Year 13), Intermediate Biology Olympiad (Year 12), and Biology Challenge (Year 9 and Year 10).
  - 2) Microbiology in Schools Advisory Committee (MiSAC) annual poster competition (Key Stage 3 and Key Stage 4).
  - 3) Royal Society of Biology Nancy Rothwell Prize biological drawing competition (all year groups).
  - 4) Cambridge Biology Challenge, run by Homerton College. (KS4 and KS5).
- Enter an essay competition (Year 12)
  - Take an Open University free short course or MOOC (A level)
  - Complete a project for Newstead's Science Expo (Key Stage 3)
  - Attend the Royal Society's Summer Science Exhibition (Year 10 or above)
  - Take part in the Bath University evolution study (Year 12)

Want to do some reading? See the Biology reading list.

## In Chemistry

Work experience

[Our Programmes – InvestIN Education](#)

[Summer schools | Department of Chemistry | King's College London \(kcl.ac.uk\)](#)

Virtual experiments.

[Summer schools | Department of Chemistry | King's College London \(kcl.ac.uk\)](#)

[Interactive screen experiments | RSC Education](#)

[Chemistry Simulation - Javalab](#)

Want to do some reading? See the Chemistry reading list.

## In Physics

- Get involved in a local astronomy society (e.g. Orpington Astronomical Society).
- Come along to Physics Society on Friday lunchtimes from 1.30 in P17
- Consider an EPQ in a Physics related area
- Complete a free Open University Open Learn Physics related course
- Enter the Eurekas competition (Age 11-16)
- Take part in the Physics Olympiad (Year 12 or 13)
- Consider making a Physics related entry to the Science Expo (KS3)
- Youth Membership to the Institute of Physics
- Visit Greenwich Observatory

Want to do some reading? See the Physics reading list.