



SHERFIELD
SCHOOL

Science

MAT Subject Identification Criteria

Characteristics of a more-able pupil in Science

- A strong curiosity about objects and environments; to seek explanations for the things and events they observe, often asking many questions, especially 'Why?'
- An interest in collecting, sorting, and classifying objects
- Demonstrating and sustaining a high level of interest in investigating scientific phenomena
- Demonstrating an intense interest in one particular area of science (e.g. astrophysics) to the exclusion of other topics.
- Easily bored by over-repetition of basic ideas but enjoyment of challenges and problem solving
- A tendency to make observations and ask questions
- An ability to learn novel ideas readily: understanding models and theories with relative ease
- An ability to relate novel ideas to familiar ones, including the ability to make connections between scientific concepts and observed phenomena
- An ability to move beyond the information given, remaining within the context in which it has been learnt
- An ability to move ideas from the context in which they have been learnt to an unfamiliar context, e.g. linking school science concepts to knowledge developed outside of school
- Dissatisfaction with over-generalised explanations and inadequate detail
- Recognising and using formal scientific conventions
- Leaping ahead or jumping steps in an argument and detecting flaws in the reasoning of others
- An ability to formulate hypotheses, manipulate variables fairly and make predictions
- An ability to suggest a variety of alternative strategies for testing predictions or gathering evidence
- Rapidly perceiving the direction of an investigation and anticipate outcomes
- An ability to identify patterns in data where the links are not obvious
- A desire to quantify experimental results by counting, weighing or otherwise measuring
- An ability to generate models, which may be modelled mathematically
- An ability to generate creative and valid explanations for phenomena, using scientific terminology

Parents can support a more-able Senior pupil in Science by encouraging them to:

- Ask your child to teach you what they've learnt in Science today
- Watch scientific documentaries together and discuss the ideas, concepts and images. There is a terrific range available via BBC iPlayer, National Geographic (on Disney+), Netflix etc.
- Visit the Science Museum in London
- Purchase a subscription to 'Focus' Magazine
- Promote the use of revision websites: BBC Bitesize for KS4 Science is an invaluable resource
- We recommend the following scientific books for Years 9 to 13 and beyond...
 - Fundamental (Tim James)
 - Quantum (Jim Al-Khalili)
 - The Body (Bill Bryson)
 - Elemental (Tim James)
 - The Aliens are Coming (Ben Miller)
 - The Science of Everyday Life (Marty Jopson)
 - Quantum Theory Cannot Hurt You (Marcus Chown)
 - Storm in a Teacup (Helen Czerski)
 - Astronomical (Tim James)
 - Brief Answers to Big Questions (Stephen Hawkins)
 - It's Not Rocket Science (Ben Miller)
 - Human Universe (Prof. Brian Cox)
 - What a Wonderful World (Marcus Chown)
 - The Planets (Andrew Cohen)
 - A Brief History of Time (Stephen Hawking)
 - There is no Planet B (Mike Berners-Lee)
 - How To and What If? (Randell Munroe)

Parents can support a more-able Senior-Prep pupil in Science by encouraging them to:

- Ask your child to teach you what they've learnt in Science today
- Watch scientific documentaries together and discuss the ideas, concepts and images.
- Visit museums and "hands-on" centres such as the Look Out Discovery Centre in Bracknell and the Winchester Science Centre and Planetarium.
- Visit a local nature reserve (join a guided tour if you can) or join a wildlife charity – the RSPB and local Wildlife Trusts organise plenty of activities throughout the year.
- Purchase a subscription to a scientific magazine. Aquila is aimed at 8-13 year olds and presents many Science projects, inspiring self-motivated learning with a focus on a new topic each issue. The Week Junior, Science & Nature is filled with fascinating facts, in-depth explainers, incredible images, experiments and activities.
- Promote the use of revision websites: BBC Bitesize for KS2 and KS3 Science is an invaluable resource for all students.
- Read a book – We recommend the following scientific books for Years 5 to 8 and beyond...

- The Science Book: Big Ideas Simply Explained (DK)
- How Machines Work (David Macaulay)
- Thing Explainer- complicated stuff in simple words (Randell Munroe)
- What If? (Randell Munroe)
- Horrible Science series (Nick Arnold)
- A Really Short History of Nearly Everything (Bill Bryson)
- Is there Anybody Out There? (Dara O’Briain)
- Secret Science: The Amazing World Beyond Your Eyes (Dara O’Briain)
- 100 Things to Know about Science (Usborne)
- See inside your Body (Usborne)
- How Science Works: The Facts Visually Explained (DK)
- The Bacteria Book: The Big World of Really Tiny Microbes (Steve Mould)
- The Element in the Room: Investigating the Atomic Ingredients that Make Up Your Home (Mike Barfield)
- Wild Scientists: How animals and plants use science to survive Steve Mould)

And finally, ask the Science Department for further ideas 😊