Reading beyond the classroom
Science, Years 10 & 11.

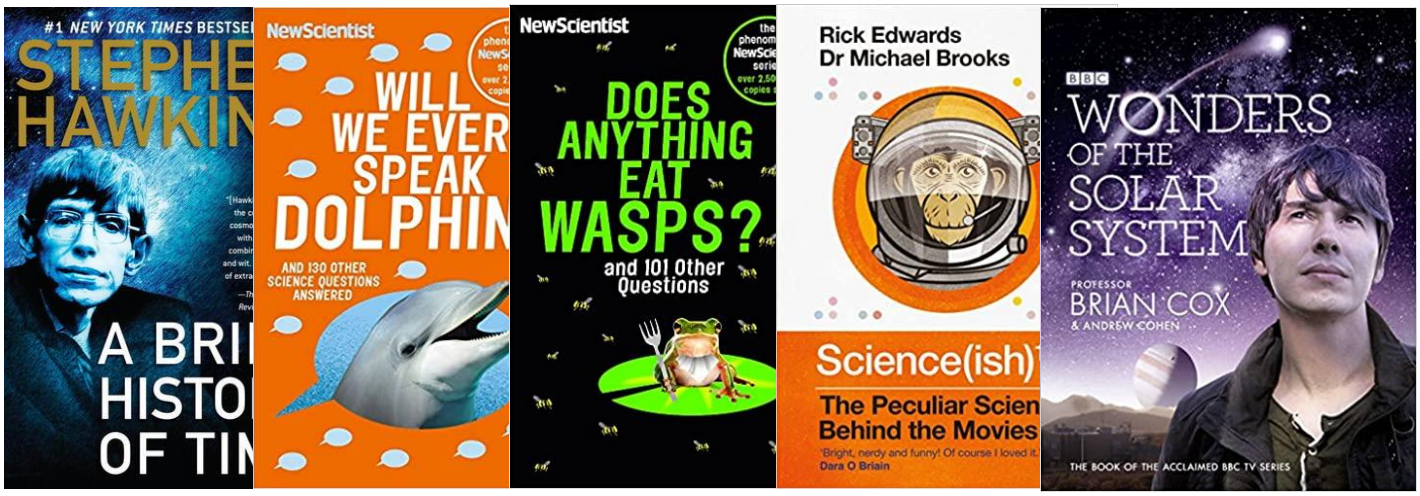
BYRCHALL HIGH SCHOOL

While in Years 10 and 11 students should try and read a wide variety of books. The more students read then the more they understand about biology, chemistry and physics. Students should read to solve a problem, understand the steps in an experiment, gain base knowledge about a concept, answer their own questions, compare their inquiry results with what others have found, expand their basic understanding of a concept, and for enjoyment.

There are a number of high-quality websites:

https://arstechnica.com/
https://www.atlasobscura.com/
https://www.bbc.co.uk/news/science_and_environment
https://www.chemistryworld.com/
https://futurism.com/
https://www.gizmodo.co.uk/
https://www.npr.org/sections/science/?t=1592912516057
https://www.smithsonianmag.com/
https://www.space.com/
https://www.theguardian.com/science

In addition to this, our recommendations follow below. These texts do not form part of our schemes of work so reading them will not spoil students' enjoyment of future lessons. They will most likely complement the work we do.



Upper school

Thea Cooper & Arthur Ainsberg *Breakthrough*
It is 1919 and Elizabeth Hughes, the eleven-year-old daughter of America s most distinguished jurist and politician, Charles Evans Hughes, has been diagnosed with juvenile diabetes. It is essentially a death sentence for young Elizabeth. The only accepted form of treatment starvation whittles her down to forty-five pounds of skin and bones. Meanwhile, miles away, Canadian researchers Frederick Banting and Charles Best manage to identify and purify insulin from animal pancreases a miracle soon marred by scientific jealousy, intense business competition, and fistfights. In a race against time and a ravaging disease, Elizabeth becomes one of the first diabetics to receive insulin injections while the scientists and a little known pharmaceutical company Eli Lilly struggle to make it available to the rest of the world.

Ben Goldacre *Bad Science*

Since 2003 Dr Ben Goldacre has been exposing dodgy medical data in his popular *Guardian* column. In this eye-opening book he takes on the MMR hoax and misleading cosmetics ads, acupuncture and homeopathy, vitamins and mankind's vexed relationship with all manner of 'toxins'. Along the way, the self-confessed 'Johnny Ball cum Witchfinder General' performs a successful detox on a Barbie doll, sees his dead cat become a certified nutritionist and probes the supposed medical qualifications of 'Dr' Gillian McKeith. Full spleen and satire, Ben Goldacre takes us on a hilarious, invigorating and ultimately alarming journey through the bad science we are fed daily by hacks and quacks.

Randall Munroe *What if?*

From the creator of the wildly popular xkcd.com, hilarious and informative answers to important questions you probably never thought to ask. Millions visit xkcd.com each week to read Randall Munroe's iconic webcomic. Fans ask him a lot of strange questions: How fast can you hit a speed bump, driving, and live? When (if ever) did the sun go down on the British Empire? When will Facebook contain more profiles of dead people than living? How many humans would a T Rex rampaging through New York need to eat a day? In pursuit of answers, Munroe runs computer simulations, pores over stacks of declassified military research memos, solves differential equations and consults nuclear reactor operators. His responses are masterpieces of clarity and hilarity, complemented by comics. They often predict the complete annihilation of humankind, or at least a really big explosion

Rick Edwards & Dr Michael Brooks *Science(ish)*

Can we resurrect dinosaurs, *Jurassic Park*-style? Are we living in *The Matrix*'s digital simulation? Do aliens with acid blood exist somewhere in the universe? Will we ever go back and visit 1955? And just why were the original *Planet of the Ape* movies so terrible? In *Science(ish)*, Rick Edwards and Dr Michael Brooks confront all the questions that your favourite movies provoke. Inspired by their award-winning podcast, this popular (hopefully) science (definitely) book dedicates each chapter to a different sci-fi classic, and wittily explores the fascinating issues that arise. Covering movies from *28 Days Later* to *Ex Machina*, this is a joyous ride through astrophysics, neuroscience, psychology, botany, artificial intelligence, evolution, and plenty more subjects you've always wanted to grasp. Now's your chance: stylishly designed and illustrated throughout, *Science(ish)* is the perfect gift for every curious mind.

Prof Brian Cox & Andrew Cohen *Wonders of the Solar System*

Wonders of the Solar System – the book of the acclaimed BBC TV series – Professor Brian Cox will take us on a journey of discovery where alien worlds from your imagination become places we can see, feel and visit. The Wonders of the Solar System – from the giant ice fountains of Enceladus to the liquid methane seas of Titan and from storms twice the size of the Earth to the tortured moon of Io with its giant super-volcanoes – is the Solar System as you have never seen it before.

Sam Kean *The Disappearing Spoon*

Why did Gandhi hate iodine (I, 53)? Why did the Japanese kill Godzilla with missiles made of cadmium (Cd, 48)? How did radium (Ra, 88) nearly ruin Marie Curie's reputation? And why did tellurium (Te, 52) lead to the most bizarre gold rush in history? The periodic table is one of our crowning scientific achievements, but it's also a treasure trove of passion, adventure, betrayal and obsession. The fascinating tales in The Disappearing Spoon follow carbon, neon, silicon, gold and every single element on the table as they play out their parts in human history, finance, mythology, conflict, the arts, medicine and the lives of the (frequently) mad scientists who discovered them. Why did a little lithium (Li, 3) help cure poet Robert Lowell of his madness? And how did gallium (Ga, 31) become the go-to element for laboratory pranksters? The Disappearing Spoon has the answers, fusing science with the classic lore of invention, investigation, discovery and alchemy, from the big bang through to the end of time.

Stephen Hawking *A Brief History of Time*

In the thirty plus years since its publication in 1988, Stephen Hawking's classic work has become a landmark volume in scientific writing, with more than nine million copies in forty languages sold

worldwide. That edition was on the cutting edge of what was then known about the origins and nature of the universe. But the intervening years have seen extraordinary advances in the technology of observing both the micro- and the macrocosmic worlds. These observations have confirmed many of Professor Hawking's theoretical predictions in the first edition of his book, including the recent discoveries of the Cosmic Background Explorer satellite (COBE), which probed back in time to within 300,000 years of the universe's beginning and revealed wrinkles in the fabric of space-time that he had projected. Eager to bring to his original text the new knowledge revealed by these observations, as well as his own recent research, Professor Hawking has prepared a new introduction to the book, written an entirely new chapter on wormholes and time travel, and updated the chapters throughout.

Bill Bryson *A Short History of Nearly Everything*
In Bryson's biggest book, he confronts his greatest challenge: to understand—and, if possible, answer—the oldest, biggest questions we have posed about the universe and ourselves. Taking as territory everything from the Big Bang to the rise of civilization, Bryson seeks to understand how we got from there being nothing at all to there being us. To that end, he has attached himself to a host of the world's most advanced (and often obsessed) archaeologists, anthropologists, and mathematicians, travelling to their offices, laboratories, and field camps. He has read (or tried to read) their books, pestered them with questions, apprenticed himself to their powerful minds.

New Scientist *Question Everything*
All science begins with questions... - Why is the night sky black, even though it's full of stars? - How do pebbles skim on water? - Why doesn't your own snoring wake you up? - And why is the Large Hadron Collider so ... er ... large? This is a great book for people who want to read a little a bit of information on a lot of subjects. I like that for each question there are multiple answers, it meant that if you don't understand one answer or you want more detail you can get it from another source.

New Scientist *Will We Ever Speak Dolphin?*
Informative, hilarious, sometimes unsettling and always unexpected, the questions and answers from *New Scientist* readers in the magazine's popular 'Last Word' column are endlessly fascinating. *Will We Ever Speak Dolphin?* brings the best of the bunch together in another witty, weird and wise compendium that's irresistible for 'Last Word' fans and new readers alike.

New Scientist *Does Anything Eat Wasps?*
Have you ever thought up a question so completely off-the-wall, so seemingly ridiculous, that you couldn't even find the courage to ask it? Maybe at the sports bar you were transported by the beauty of your beer to wonder, "How long could I live on beer alone?" Or, cycling through the park, you mused, "Did nature invent any wheels?" Or looking up at the night sky, you had a moment of angst, "What would happen if the moon suddenly disappeared -- if it were vaporized or stolen by aliens?"
Full of fun facts, *Does Anything Eat Wasps?* is a runaway bestseller around the world. It celebrates the weird and wacky questions -- some trivial, some baffling, all unique -- and their multiple answers culled from "The Last Word," a long-running column in the internationally popular science magazine, *New Scientist.*

'The important thing is to never stop questioning.'

Albert Einstein (Scientist)