The Royal College of Science Union's Science Challenge 2013

Why are so many students being put off studying science at school?

"*Every kid starts out as a natural-born scientist, and then we beat it out of them. A few trickle through the system with their wonder and enthusiasm for science intact*."- Professor Carl Sagan

Each and every one of us is born into a universe which is sublimely complex, more than we will ever know. Each and every part of this universe is inextricably intertwined within the separate cosmos of science; a whole different macrocosm bursting with beauty, wonder and curiosity. Then why are we perilously approaching an established state of society where students are repulsed by science, are no longer fascinated by its wonders, and blindly believe its use in their life is simply antithetical?

Perhaps a starting point to answering this question emerges from the stew of myths spouting from society's anti-science cauldron. The common student statement that science at school is simply 'too hard' to understand and thus rejected is controversial. Yes science can be hard, but where does any joy from learning come if everything is easy? Moreover, to enjoy science, or for anything in that matter, one should recognize that individual motivation, dedication and adherence are crucial nutrients to make something grow. As humorously put by the English physicist Oliver Heaviside, should one "*refuse their dinner just because they do not fully understand the process of digestion*?".

As a student myself, a more worrying reason for the 'great scientific turnoff' amongst my fellow peers is the increasingly propagated stereotypes stemming from the media, labelling students who embrace an interest for science as socially inept 'nerds' and 'geeks'. Yet it is these very, 'nerds', that have provided us with the media itself, from TV's to Facebook, that our teenage lives would be simply unbearable without. Equally, it is these very, 'geeks', which we will later exalt to have found the cure for cancer, to the first life on Mars. George Bernard Shaw contended that '*science is always wrong'* which has never progressed without creating more problems, yet one only needs to look at the successes of modern society to realize that they would not have been possible without individuals' love for science in the first place. Therefore, students should not disregard science, but realise that it is a 'bare necessity' to life.

Nevertheless, perhaps part of this damaged student perception and scientific ignorance is exacerbated by deteriorating relationships between the public and our scientific community. Indeed, ask any student to name three scientists and they will habitually utter Einstein, Newton, Galileo; the distance between them and those today the equivalent to the space between Earth and Uranus. If scientific progress truly is the '*standing on the shoulders of giants'* as Newton expressed, scientists should recognize their duty of communicating science and their work more effectively to the public, presenting it in interesting and engaging ways. Additionally, scientists should be '*receptive to issues raised by the public which concern them'* as commented by Professor Lord Winston, where this in turn may improve the quality of science. Only then will students be able to learn from current scientists and see them as role models; aspiring to emulate them and finally understanding the importance of their scientific school work to modern society.

Finally, science education in school is paramount to nurturing the blooming bud of scientific curiosity rooted in every child's mind. Yet, as argued by the Commons Science and Technology Committee, the school science curriculum often fails to reflect what is encountered in daily life, and more dangerously favours memorization of answers as opposed to exploration of the question; promoting the student view that science is 'irrelevant' or 'boring'. Uninspiring teachers can be criticized for dampening the

enjoyment of science amongst students, where quite simply, if they themselves have lost their passion for its concepts, how can they expect their students to gain it? In hope to re-entice students into science, perhaps we need a change of syllabus based on more experimentation that is open ended and inquiry based, along with greater collaboration between schools and universities to increase awareness of the array of scientific 'STEM' careers open to them. After all, if our students are to become the next bearers of science, it is crucial they are provided with the correct mindset and equipment to face what future science may hold.

In conclusion, the herd mentality of today's students has sadly shown me that learning science is not conventional to enjoy. Despite this, my adherence to remain as a '*natural born scientist'* derives from my admiration of science to be a fundamental and irreplaceable part of us, a subject that is vital for the technology and medical advances we need today. To me, studying science is not a chore, but an opportunity to find out more about ourselves and the world we live in; to discover more that we don't know and ways to change our lives for the better. Thus, if we strive to show students this reality of science; we can reignite the fires of scientific curiosity latently burning within them. Indeed, as stated by Professor Sagan, "*Our passion for learning …is our tool for survival".*

850 words

Further Reading/ Sources

Winston, R. (2010). Bad Ideas? An arresting history of our inventions. Bantam Press: London.

Seelman, Gloria. A Scientist's Guide to Making Successful Presentations to High School Students.

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