



# Can the Higgs Discovery Be Explained to Kids?



## ««« By Jason Wood

Jason Wood is a junior science teacher at Holy Trinity School in Richmond Hill. He spent 3 years at the Ontario Science Centre as an educator, owns his own science education company called Funology and spends his spare time geeking out reading the latest scientific research on anything physics or space. His goal is to popularize science among impressionable youth to create a new generation of science rockstars.

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*Curriculum Connection: All grades, all subjects.*

In the 1960s, kids were glued to the television as Neil Armstrong took his first steps on another world. The space race created a generation of scientists that now hold top scientific posts across the planet. These men and women were motivated by the power of science and technology in creating a reality out of pure fantasy — trips by humans to the moon.

What are the current mainstream, cutting-edge science and technology programs that inspire kids today?

To some, they simply don't exist. They argue that awe-inspiring science programs, like missions to Mars, are too expensive and don't appear to be beneficial. While it's true that the world may be skeptical of expending large amount of resources on future missions to space, the non-believers appear to be missing the amazing discoveries that are occurring almost daily in our world.

Since the great combination of cold war politics and science produced the space age, science has appeared to have disappeared from today's dinner table talk. But, of course it hasn't. Instead we reap the benefits of innovation after they have been discovered, built and distributed. How many of us can relate to dinner being interrupted by instant messaging, texting, or calls? Has dinnertime talk — with those in our own homes — disappeared?

Wi-Fi, plasma television, electric cars and the Internet are all outstanding achievements of science and technology, yet they just don't seem to get the credit they deserve, or seem to be inspiring young people to engage with science.

Educators now have an opportunity to help reconnect students of the millennium generation with the great endeavor of science and the wonders it reveals. Buried deep beneath the layers of media that flood our daily lives with stories of political unrest, ecological crises and economic disaster is a stream of small but important messages detailing the discoveries of science.



Take for example, the recent mass media coverage of the Higgs particle. Also dubbed “The God Particle,” the Higgs is the missing link in the standard model of particle physics. Without it, the theory would break down and years of scientific research would have been wasted. The Higgs tells us how mass is created in the universe. Just like gravity or magnetism, the universe is covered in a small but important field called the Higgs field. As particles drive through it they obtain mass. Similar to the way the force of gravity appears to be invisible as it pulls the Earth around the Sun.

The Higgs discovery is the result of collaboration on a grand scale by several countries (including Canada) to design, build and fund the most complicated machine on the planet — The Large Hadron Collider.

How can educators in the primary and junior grades bring this complex particle physics story into their classes without overwhelming kids who struggle with the concept of gravity? By embracing the greatest tools that children have at their disposal — imagination.

In the world of particle physics where tiny unseen particles only exist as mathematical equations, it can be difficult for adult educators to explain the basics of quantum mechanics to themselves let alone to a wide-eyed and curious school kid. However, much material exists on the Internet that educates the properties of complex scientific experiments to a mass audience (eg. <http://www.discovery.com>, <http://www.phdcomics.com>, <http://www.ted.com>). Educators who invest time studying this information have a better chance of sharing it with their students. The students themselves, with a deep reserve of curiosity, can use their imaginations to experience this mysterious world and create their own interpretations. More clearly: if children can imagine a world of wizards flying on brooms, casting spells with wands, they can certainly understand a world where giant machines smash particles together to produce new ones.

Sure there’s no proven correlation between being interested in science discoveries and becoming a scientist, but it’s obvious the sooner you get motivated by the power of science, the more likely it is you’ll stick with it. Students who engage in the early years may develop a greater curiosity for the world around them, providing that extra motivation to push through those difficult times in science.

Although the evening news isn’t often filled with talk of amazing feats of science, there still exists plenty of chatter on some amazing discoveries. All educators need to do is look a little closer.

