



# The Big Bang

@ Thomas Deacon Academy

**STEM Event:**  
**1st - 5th December**  
Everyone is welcome!

**Come and take part in all  
of the fantastic Science,  
Technology, Engineering  
and Maths activities!**

- Challenge the Champions
- Classroom Surgery
- Zombie Science
- The Science Show
- Maths Magic



Steve Allman



Designed by Ainsley Augustine  
Edited by Ryan Jones



Bloodhound Project  
Challenge



Thomas Deacon  
Academy

**Come and see  
Steve Allmans'  
Winter Science  
Show on Thursday  
4th December!**

**See our programme for  
a fun packed week of  
STEM Activities that we  
have on offer...**



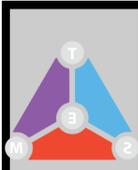
[twitter.com/TBB\\_Eastern](https://twitter.com/TBB_Eastern)



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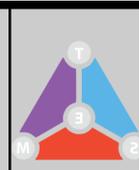


[youtube.com/thebigbangfair](https://youtube.com/thebigbangfair)

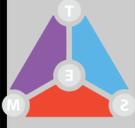


# Big Bang@TDA 2014

## Programme of events

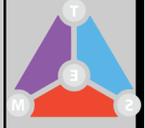


Day	Venue	Event	Target Audience	Impact
Monday	LT1	Mathematical Magic The Maths of the Simpsons	Year 8 Year 11/12/13/	360
Monday	LT2	Creativity using STEM	Year 7	360
Monday	LT1	The Caterpillar Lecture Simon Collins and Sarah Rust	Year 12/13 Engineering/ Technology / Science Year 11 Potential Scientists/ Engineers	120
Tuesday	Sports Hall	Challenge the Champions Sports Hall Science	Year 12/13 Sports Students GCSE Sports Students All Year G&T sports students	300
Tuesday	LT2	Trashion !! Fashion from trash !!	Selected students	60
Tuesday	LT1	Careers in the Space sector. The role of the space Catapult	Year 8/9 and 10 potential Scientists and Engineers	120
Wednesday	LT1	Classroom Surgery	Medics 12/13 HSC 9-13 Triple Science ?	200
Wednesday	LT2	Classroom surgery	Medics 12/13 HSC 9-13 Triple Science ?	200
Wednesday	LT1	<i>Staff Training session</i>		
Thursday	Drama	The Science Show	Year 7 and Year 4	360
Thursday	LT2	Royal Academy of Engineering Challenge	Year 10 Engineers	10
Thursday	LT1	The Science show	Year 4	90
Friday	LT1	Brain of the dead. Zombie Science	Year 11 Year 12/13	400
Friday	LT2	The BloodHound Challenge	Year 9 STEM Scholars	60
				2400
Wed-Fri	Atrium	Poetry Display in Atrium 6 boards with Banners		
Mon-Fri	Atrium	Catapillar Engine Display in Atrium		
Tues- Friday	Atrium	Trashion Display		
Wed-Fri	Atrium	Chain Reaction display		
Wed-Fri	Atrium	Number Day Display/Stand		



# The STEM Challenge

## Activities for the classroom



This week we will be thinking about S.T.E.M. and how important it is that we have enough Engineers, Scientists and Mathematicians in the future. You are the Future!!!!

Think S.T.E.M.

You may have the opportunity to take part in some of these varied workshops. There are also STEM challenges taking place– Amazing STEM Facts and THUNKS !

The BloodHound Project– Racing cars

Brain of the Dead-Zombie Science

Classroom surgery

Maths Magic...

Maths and the Simpsons

Royal Academy of Engineers

Creativity using STEM-Poetry

Challenge the champions

Classroom Medics

The Real Science Show.....

### The STEM Amazing Facts challenge.

Did you know that....

The Entire Internet weighs about the same as one large strawberry?

Forty is the smallest number whose letters are all in alphabetical order

Come up with some amazing STEM Facts and place them on the boards in each College. The best board will win the Challenge

### THUNKS.

Hold a discussion in class on a STEM issue where there may be no obvious answer.....e.g.

- Does Space just end?
- No design solution is original
- Do clever people wear glasses?



## **THUNKS: Thinking about STEM....**

What are Thunks? This is a question or an idea which gets us to think and discuss a random idea or concept.

STEM has a whole possible range of ideas which could stimulate thought and in lessons and in tutor time this it would be great if you would hold some Thunks discussions.

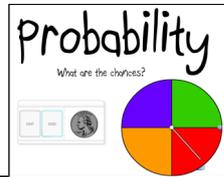
Some ideas to get you started.....

- If you read a novel or play a digital game, are you being sucked into another universe?
- Does Space just end?
- No design solution is original
- Do clever people wear glasses?
- Is sparkling water lighter than still water?
- If you made bricks twice the size would it take half the time to build a house?
- Are you good at science?
- Would an egg-timer (sand hourglass) work on the moon?
- Is it more important for a scientist to ask the right questions than to have the right answers?
- When you switch off the light does the wall change colour?
- If earth is in space what's space in
- Can we ever build a computer that knows everything?
- Are you time travelling if you fly/ drive between 2 different time zones
- If you are caught in a thunderstorm will you get wetter if you run to shelter or if you walk?
- If the Internet is forever, then has the Internet been around forever?

# STEM Week activities

## Creativity using STEM

Students in Year 7 will be looking at Probability as a tool to choose words and phrases and Poetry as a means of expressing these scientifically obtained ideas. How random is poetry? Is Poetry carefully organised or can probability play a part? All students will create a poetry using probability and will display poems in the Atrium. These will be judged and prizes awarded at the end of the week.



## Inspirational Maths

### Mathematical Magic KS3 Workshop Year 8

All magic is based in doing something that seems impossible, but can actually be done by following certain steps. Students will see some seemingly impossible tricks and then it will be revealed how they can use mathematical logic to discover how they're done. At the end of the session they will be able to amaze their friends and family with Magic and Mathematics.



### Maths in The Simpsons KS4 and KS5 Maths

Very few people associate The Simpsons with Mathematics, but if you look closely at the episodes there is plenty of Mathematics to be found. The writers of The Simpsons and Futurama have hidden advanced Mathematics jokes in the background about everything from Mersenne Primes to four dimensional objects. Students will be shown clips from The Simpsons and will then take a closer look at the Mathematics involved.

## Challenge the Champions (Sports students in years 11/12/13)

Students take part in a range of workshop activities that challenge them fully and uses the newest technology available. Your students get to test their strength, speed and power in a range of activities including:

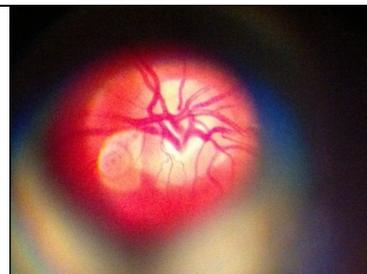
- Racing elite sprinters on The Accelerator to see what their peak running speed is.
- Measuring ball throwing speed
- Testing reaction times with BATAK reaction wall
- Record jump height and jumping distance
- See how much power they can generate on a Watt bike
- Test their agility in the Hexagon agility test
- See how far they can row in the rowing machine challenge!



## Classroom Surgery

Students have an opportunity to learn about and then do some surgical techniques including:

- Using an iPhone Retina Scan,
- Using an Ultrasound Machine,
- Giving an injection to Andy the injection arm,
- Recording an ECG
- Taking medical observations
- Meeting Stan the Patient Simulator.
- Record muscle activity whilst holding a weight using an electromyograph EMG
- Use a real needle to take blood from a fake arm
- Insert an Intubation tube into Eddy the Head



This is a hands on practical workshop which looks at the Science and technology used in modern medicine.

## **The Science Show Year 7 and Year 3 (JTDA)**

Find out how to freeze a reindeer, the formula for the 12 days of Christmas, how to levitate mince pie tins, and make snow instantly in our fast paced, magical and humorous science show investigating the Science of Winter.

This show is a great celebration of the STEM subjects.

It is full of amazing science demonstrations using dry ice and liquid nitrogen, levitating tinsel, bouncing baubles and flaming puddings, you'll even find out the perfect genetic excuse never to eat sprouts again.

This is a science show not to be missed.

Come and experience the excitement of Science and Technology in action



## The Royal Academy of Engineers

Does Engineering design make a difference ? Teams of students will investigate this question by carrying out a research and construction and testing project. They will investigate the impact of STEM on wheelchair sport design—does the medal belong to the athlete or the engineer ?

This is a project developed by the Royal Academy of Engineers and in which we at TDA helped by testing the activities before they were published !



## The Bloodhound Project Challenge

The Bloodhound Project is an exciting project which has the simple aim of creating the worlds fastest car ! In this workshop you will be working as Engineers in teams on creating something less spectacular but equally exciting !!

### Bloodhound The Worlds Fastest Car

Faster Than A Speeding Bullet, Honestly!



### The Ultimate STEM Project!

**Bloodhound SSC** is exactly what it says - a SuperSonic Car!

It is **supersonic** because it is designed to go faster than the speed of sound.

It is a **car** because it has four wheels and is under full control of its driver.

Bloodhound SSC is a jet and rocket powered car designed to go at 1,000 mph (just over 1,600 kph). It has a slender body of approximately 14m length with two front wheels within the body and two rear wheels mounted externally within wheel fairings. It weighs over 7 tonnes and the engines produce more than 135,000 horsepower - more than 6 times the power of all the Formula 1 cars on a starting grid put together!

The Car is a mix of car and aircraft technology, with the front half being a carbon fibre monocoque like a racing car and the back half being a metallic framework and panels like an aircraft.

## Zombie Science—Brain of the Dead

A lecture about the Science of Zombies..... Well thats what they said!! Come and learn about Brain Science in a different and entertaining way. This will help you to see the Science of Biology in a new way and help you top apply Science knowledge. There are all sorts of opportunities in STEM subjects .....

### Zombie Science: Brain of the Dead

*A spoof tutorial on the real science behind the Zombie Brain.*

*Designed for teenage and adult audiences.*

*Intended to entertain as well as educate about science.*

*Perfect for comedy events, arts festivals, science festivals, conventions and many more.*



#### About

Discover how a Zombie brain works in this spoof lecture featuring interactive demonstrations and a multi-media presentation. This is the science you need to survive the inevitable Zombie apocalypse.

.....

#### quotes

*"Hilarious, insightful - an absolute must for would-be-survivors young and old"*  
- **The Science Informant**

*"Genuine educational entertainment ... stupidly funny and thought-provoking"*  
- **Latest ?**

# Number Day

Number Day is a fun, nationwide maths fundraising event for young people of all ages that helps raise money to support the NSPCC.

TDA will be marking this day by having a sponsored pi recitation challenge. Simply learn as many digits of pi as you can and collect sponsors 'per digit'. The more you memorise, the more money we can raise for the NSPCC. Everybody who takes part in the challenge will receive a limited edition badge and those who raise more than £10 will get also receive a limited edition keychain.

There will also be a prize for the person who memorises the most!

If you would like to get involved, please see Mr Ladak or your maths teacher. Good luck and here are a few digits to get you started:

3.14159 26535 89793 23846.....

## **Up cycling / Trashion**

Have you got any unloved and unwanted clothes or textile products in the back of your wardrobe?

Imagine you wake up to a world without textiles. There would be no curtains, clothes, carpets etc. As we are running out of natural resources we need to find ways of reusing, recycling and saving resources. We have to preserve them for future generations.

Join us for an exciting session on how to up cycle your old clothing with costume/ textile designer Tracey Cliffe, who has worked on exciting projects such as Coronation Street and ethical fashion company Trade. Learn practical skills and create your own up cycled product.



# The STEM Lectures

## The Monday Lecture: Caterpillar

Speakers: Simon Collins and Sarah Rust

"Did you know that UK engineering companies are predicted to need 1.86 million people with engineering skills up to 2020? STEM is vital to our country's economic success, but it is still subject to urban myths and gender stereotypes to such an extent that there's a chronic shortage of young people choosing to study STEM related subjects, and pursue STEM related careers. With an estimated 2.5 million job openings in engineering companies predicted by 2022 this shortage needs to be addressed.

It's against this background that I'll provide you with an insight into the varied range of career choices that STEM qualifications can lead to, with some specific examples of how STEM skills are utilised in my organisation, Caterpillar."



## The Tuesday Lecture: 'Not just an Astronaut'

**Christopher Duff**  
**Regional Project Manager**  
**National Space Academy and Satellite Applications Catapult**  
**Rutherford Appleton Laboratory**

I will take you on a journey through the space industry, the different ways in which you can get involved—there is more to the space industry than just being an astronaut...although we do need astronauts too... Working within the Space Sector gives me a unique perspective into the Space sector: from human spaceflight, and the research and development that goes into developing ground and space based technology. These can be used to examine the further reaches of our Galaxy or land onto the unexplored terrain of our Solar System; to the everyday applications that come from satellites: from monitoring flooding risks in the UK to being used in global crisis, such as providing real-time information and data to those currently tackling the Ebola outbreak. Jobs in this sector range from engineering to medicine, particle physics to high-powered computing.

