



Science Technology Engineering Art Math

We have had an amazing year of STEAM and would like to thank all our Years 7,8,9 STEAMmies, Year 10 Academics, 6th Form STEAM Ambassadors and all the STEAM staff for being outstanding participants in the STEAM Enrichment Programme.

Looking back, we have enjoyed a diversity of cross curricular STEAM project rotations and here is a flash back to our best bits .....

**Tessellating Tiles Club – with Miss Griffiths, Miss Peterson and Miss Haviland –**

Last year saw the arrival of the Art rotation within the pre-existing STEAM club. We wanted to develop projects that genuinely connected the subjects of Science, Maths, Engineering and Technology to Art, projects that were quite separate to what they would be doing within Art lessons. Last year’s rotation was Photography, starting with STEAMmies producing cyanotypes and then making their own Pinhole cameras, recycling drinks cans and shoe boxes to produce the mechanism. After a fair amount of trial and



error (the teachers too were learning with the STEAMmies on this one!), we were able to create a dark room environment, establish how much exposure time the paper needed and develop some very interesting photographs. Within this year’s Art rotation we looked at ‘Tessellating Ceramic Tiles’,

STEAMmies had to use their Maths skills to draw out symmetrical patterns into clay. These were then coated with different coloured slips, were fired and then a transparent glaze was applied on top. Includ-

ing Art in STEAM has allowed a wonderful cohesion of creativity and technology, skills that will make our STEAMmies more marketable when they enter the employment sector in future!

**Mega Maths Club – with Mr Sellars –**

Maths is a core component of STEAM and the Maths projects were developed to build upon data analysis skills. We wanted our STEAMmies to look at the mathematical modelling processes in different scenarios, such as: a) criminal penguins, which looked at how some actual penguins stole rocks from other penguins in order to build their nests and we modelled different behaviours based on the probability of being a ‘forager’ or ‘stealer’, b) bungee jumping, where we investigated how the length and elasticity of the bungee cord were key factors and that the mass of the jumper would have an influence on whether they would/would not hit the ground, c) the spread of disease, where we found a very close relationship to the actual 1904 India plague, which started off exponentially, then peaked and returned to zero by working on our graph skills. Our STEAMmies will now be able to problem solve any scenario anywhere!



**Robotics Programming Club – with Mr Haddleton –**

The ever popular Robotics Programming Club returned this year and the STEAMmies completed new programming tasks using Drone and the Sphero. They competed against each other for the ultimate accolade of being the Robot Drone Pilot champions. The STEAMmies had to choose whether to pilot Jumpin’ Max over a twisting maze made from classroom desks or pilot Travis the drone over a 3D obstacle course as fast and accurately as



Science Technology Engineering Art Math

possible. There were risks a-plenty, with dangerous jumps to be made in the maze and height flying limits for Travis. Lots of dronesies were taken with lots of smiling faces involved! While the challenges were tough, our STEAMmies did not falter in their efforts and learned a lot about the wonderful world of robots!



#### **The Maths of Language Club – with Mr Revelant –**

There is more to language than meets the eye, as our STEAMmies discovered in this project rotation. They played games which taught them more about word taxonomy and the complex and delicate relationship between words. The STEAMmies successfully competed against each other to communicate by not using taboo words and this was an excellent exploration of how communication gets impaired when our usual linguistic code gets disrupted because of the introduction of new rules. They role played the scenario from the movie, Arrival, whereby they created their own intergalactic language of peace also. They learned there is a lot of Maths and technique involved in understanding and devising language!



#### **Business & Enterprise Club – with Mr McGuinness and Mr Siddiqi –**

Our newest STEAM Club subject involved the STEAMmies making strategic business decisions for a Sportswear business, where the decisions had a direct impact on the stakeholders of the business.

They played the stakeholder game to analyse the impact of strategy on different stakeholders and compare the results. They found that making decisions to satisfy shareholders can become increasingly difficult, with the wrong decision costing valuable points/money. We soon had our STEAMmies thinking strategically by prioritising different stakeholders. The young investors found out what a stock market is and how investors manage to make profit (and losses!) by buying and selling shares in industries such as airlines, TV and media, and cosmetics. Their maths skills were put to the test as they needed to work out the value of their portfolio by multiplying the number of shares by the share price of the business. Looks like we may have a very clever cohort of future investors amongst our STEAMmies!



#### **Geology Club – with Ms Niklekaj –**

Another new STEAM Club saw the STEAMmies learning about geology, especially rock formation. They studied the three types of rocks, igneous, metamorphic and sedimentary, looking at Ms Niklekaj's rock collection from Lanzarote, describing the rocks depending on their colour, lustre as well as the presence of crystals. The STEAMmies looked at different ways of describing rocks, something that geologists have to take into account to decide on the type of the rock/mineral. They studied how crystal structure varies from one mineral to another, tenacity, how the particles of a mineral hold together, odour/taste, and found that most minerals have no odour unless they are acted upon in one of the following ways - heated,





Science Technology Engineering Art Math

rubbed, moistened or breathed upon. A fascinating exploration into the world of rocks!

### Design Technology Club – with Ms Aldred-Hall

- The STEAMmies explored ideas using the 5 W’s for a product in a tin competition. They worked collaboratively to discuss different user groups and their specific needs so that they can design a useful product. They took a trip into Ms Aldred-Hall’s materials treasure cove to consider what two materials they could use to make their product and developed their ideas for the competition using techniques that helped them avoid design fixation. A plethora of STEAM skills were put to the test in this project rotation and our STEAMmies were absolutely fantastic in delivering impressive products in a tin!



### Tournament of Minds, the annual STEAM House Competition with Miss Dowson and Ms Khan; judged by Mr Maloney –

Our second year of STEAM’s annual house competition, Tournament of Minds (ToM), and the competition raised much excitement across the various year groups. This year’s challenge scenario was to design and build shoes for an astronaut to wear on a mission to Mars. The STEAMmies worked in house groups to implement all their STEAM skills and consider the climate and environmental factors on Mars, as well as the logistics of effective space shoes. Lots of excellent entries were submitted for each year group round, with Discovery house claiming first place in the overall



## STEAM ToM – overall Scoreboard

House	Score
Endeavour	1350
Voyager	1200
Discovery	1000
Challenger	200

ATA round and Endeavour house having so many finalists that they achieved the most house points overall. Well done, everyone! We are very pleased with this year’s ToM and look forward to next year’s challenge scenario too!

### STEAM Academia for Year 10 and 6th Form – with Ms Khan, Mr O’Sullivan, Mr Mensah and Dr Brickley –

“The society concerned with the pursuit of research, education and scholarship”. Current research shows that almost 100% of all new jobs will be related to STEAM. This year, we introduced STEAM Academia focussing on the diversity of the STEAM industries. Our Academics learned how global STEAM research is connected to their classroom curriculum, discovered traditional as well as new STEAM degrees and career pathways, and benefitted from the expertise from our amazing external STEAM Ambassador guests, as well as had some sessions delivered by our very own 6th Form STEAM Ambassadors – who are fast becoming the STEAM experts of the future in their own right. STEAM Academia has certainly provided much to think about and be inspired by!



**STEAM Trips and Events -** STEAM trips and events have been integral to enhancing the STEAM



# STEAM

Science Technology Engineering Art Math

Enrichment Programme and have allowed our STEAMmies incredible enrichment experiences.



Trip: Make the Future at Queen Elizabeth Olympic Park

Trip: Annual Ritchie Lecture at Science Museum

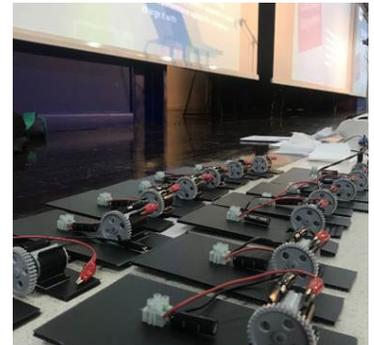


Event: Marine Engineering Workshop at ATA

Trip: International Energy Debate at BEIS Government Department



Event: Building and racing mini electric cars with Energy Quest at ATA



Event: Biology Challenge 2018 at ATA – our STEAMmies achieved Commendations, Silver Awards, Bronze Awards, and even a Gold Award in the national rankings of this online Biology

Absolutely tremendous and absolutely well done, STEAMmies! It is your enthusiasm and engagement combined with the vision and dedication of the STEAM staff that have made this academic year an incredible one for the STEAM Enrichment Programme. Such a lot has been achieved and we look forward to much more to come in the new academic year also. We will be revealing our exciting new project rotations soon ..... so watch this space. Meanwhile, if you are staying with STEAM next year, please sign your name on the sign-up sheet on the STEAM noticeboard outside the Science Office to secure your place. If you are impressed by our project rotations and would like to join STEAM next year, please collect an application form from Ms Khan at the Science Office.

We hope you enjoy a great summer break!

Ms Khan

STEAM Coordinator – Ashcroft Technology Academy