

INITIAL IDEAS FOR IMMERSIVE WEEK, ENGINEERING FAIRS – 14-19 May and 10th -14th July and 20th -22nd September

Immersive weeks are pulled together by the Ingenious Team. They will feature activities led by pupils or engineers as well as displays, lectures and workshops. The aim is to -

- **inspire school visitors and the public with the breadth of opportunities open to engineers**
- **convey the relevance of engineering today and the legacy of the past, especially Bristol’s history in shaping the future**
- **reveal the routes by which people have become engineers**
- **help build engineers who are skilled and confident communicators**

This list of ideas and potential exhibits is a brain-storm from the Ingenious Team Meeting – it is not a confirmed plan.

Ideas of the events overarching concepts	Notes / Questions	Action	Who suggested
Use a festival style approach. Pre bookable sessions with a schedule that schools and families can access	A smaller group of people need to run this. Providing clear mission for the event, it’s scope, budget and the necessary logistics.	Talk to Phil Walker Talk to Louise	
Display and reference “ How I became an expert” How I became an engineer. Showing education pathways / qualification routes. Make it clear and personal eg brief biog of engineers involved and their education history. Who to contact for support into engineering careers Who offers apprenticeships – how do you get one	Seems easy enough to do this if we provide a format Can use the engineering card in the MFMC top trumps game Make a top trumps game from all the engineers on the project Add in picture of real engineers now and when young? Produce blank cards for pupils /students to fill in	Collect pics and short bios for each engineer using playing card format	
Engineering includes girls			
Engineering includes BME			

Colourful , fun, busy and engaging	'pick up a free pen and a leaflet and go' Lots of stalls and people to meet		
Arts Award – schools/ young people that contribute an event can be included in this	Bronze and Silver Awards for engaging the public /displays etc Do we need to fund this – fund the awarder perhaps Will be appropriate for KS3 and 4 and 5	Talk to Becks	Rebecca Prior has awarding body status
Young People led	Place students/pupils alongside engineers and museum staff		
On-going competitions for young people to create displays at second /third immersive Weeks	Prizes could be site industrial site visits		Engineering Without Borders
Interactive Exhibits with Engineers	Notes and questions	Action	Who
Girls in Engineering	TBC	Talk to Katy Leighton	IStructE Curtins
See the Olympic Machine	Rehearsals for the Bristol (South West) Torch relay will be taking place – the Olympic machine is an engineering feat in itself and uses the crane and other forms of transport on the quayside	Gather details from Cirque Bijou and D Men and talk to Ingenious volunteers about being an explainer (at a suitable viewing point) while rehearsals are on going	
Bridges	Suggestion to engage military engineers with their bridge building workshops	Talk to army?	
Energy all of its different forms. Visualising, interactive, understand concept of heat, work, energy conservation, entropy, energy efficiency. <ul style="list-style-type: none"> • Energy Efficiency • What is heat? 	How is this produced? Do EDF have ready-made displays	Discuss practicalities with Richard -	EDF

<ul style="list-style-type: none"> • What is work? • Which is better? • Why efficiency? • How efficient are machines? 			
<p>Build a power station</p> <ul style="list-style-type: none"> • Whats the need? • How big? • Best place? • Whats the fuel? • Output – electricity, heat, water? • Cost? • Lifespan? • Clear up? 	<p>How is this produced Do EDF have ready-made displays</p>	<p>Discuss practicalities with Richard</p>	<p>EDF</p>
<p>Re use, reduce, recycle</p> <ul style="list-style-type: none"> • What can we do • What do we do • What does it cost • Is it worth it 	<p>How is this produced</p>		<p>EDF Others?</p>
<p>Engineer Talks about some of the exhibits at M Shed Eg - Tilt test on a bus – Vehicle testing The way that things work and how they would be made</p>	<p>Could work with Bailey Caravan’s test rig Needs variety and pace</p>		<p>Bernard North</p>
<p>Take a turn on a lathe Engineers support students with use of lathe Photos of APS students using lathe in school Practical demonstrations of working with metal</p>	<p>Can we get a lathe in a gallery? H&S Does it need to be in a workshop – schools book in</p>	<p>Talk to Andy King</p>	<p>Bernard North</p>

Cutting Drilling Turning Make a simple object in the workshop			
Meet an engineer What do they do Inspirational Exciting projects Opportunities / lifestyle Meet a deep space engineer	Could combine this with 'famous engineers' exhibition Fits with career pathways Also ties in with Engineer Top Trump Playing Cards		Claverham SEA All
Model Engineering displays and demonstrations	These call upon the support of societies and clubs		Model Engineering Club
Gauge '0' Locomotive building			Dave Oyns
Penpole Point Loco	Exhibition of tools and the loco		Dave Oyns
Robotics Workshop	2 hr workshops – Available on some of the days This is a tried and tested event using Lego robotic kits		Robogals
Mysterious Forces Gravity Demonstrations	Build your own solar system Involves cannon balls and trampolines! + Device for hearing a fired and a dropped object hit the ground at same time		Andrew Bacon
Mysterious Forces What is Buoyancy?	Explain in 3 ways – Literally (English) Qualitative description Maths – Formula and Laws Visual – Rising Tennis balls – in shaken box		Andrew Bacon
Mysterious Forces	As above with jumping wire and magnet		Andrew Bacon

Invisible Space Forcer – Electro Magnetism + Model to show how permanent magnets work internally	Model of a magnets workings is hard to make		
Chemical Rocket	Demo – hands on activity for lots of kids		Andrew Bacon
Wind Tunnel	Toy cars on ramp in box with fan .. vary the wind speed to keep car fixed on ramp Could challenge students to add weight to make them more aerodynamic to see if there is an energy saving energy		SEA
Space suit and demo of pressure	Egg in a vice –space suit?	Ask about a display model of the space suit	SEA / Claverham
Dyson Vacuum Cleaner	This is their standard workshop -	Talk to Dyson	
Demonstrations by engineers			
Power of hydraulics Energy Forces Friction Pulleys Jet propulsion Electricity	This could use a some existing artefacts and their modern counterparts		Bernard North R Kan EDF and Claverham
Outdoor Exhibits			
BMX pump track Cycling without pedalling	Will this be ready by May?		Ben Meller
Skate ramp			

Bike generator – outdoors version		Talk to Sustrans and Bike fest team Brian O Kelly Bristol Cycle Club	
Demonstrations by engineers			
Power of hydraulics Energy Forces Friction Pulleys Jet propulsion Electricity	This could use a some existing artefacts and their modern counterparts		Bernard North R Kan EDF and Claverham
Displays and exhibitions – no constant staffing required			
Famous Engineers Brunel Whittle Hooker Watt Faraday Bentley	Need diversity on this list. BME and female engineers –	Talk to Louise	Museum team?
Peddalling to generate electrical power What can you power How is this measured What does it cost	A hands on devise/ construction showing output from input in tangible ways – fits with displays on energy		Ben Meler Richard Kan
DVD Presentation about Engineering Problems – (ppt and audio)	Water for the world Hardware for display required		Engineers Without Borders-

			Anna Counalo
DVD of Engineers talking about what they do – showing projects and labs	Hardware required Is this something Anna Farthing is doing anyway	Talk to Anna Farthing	
Different Types of Engineering	Display boards – could be a ‘match the engineer to the engineering sector game’ Could incorporate Top Trumps cards	Talk to RAE	?
Arkwright Scholarship	Information and leaflets about the scholarship schemes		Dave Oyns
How's It Made -	DVD showing how everyday items and /or those in museum are put together or how they work		
Workshops led/supported by engineers			
Paper / card planes Templates to copy Create flight exhibit Air traffic control etc	Use The Future By Airbus and other resources Get ideas about create display of future air travel ideas	Requested this from Jerry / Vicki. They say Airbus volunteers can decide on appropriate use of the resources	Airbus / R-R
Musical Instruments Uni Music students Acoustician Violin Shop / guitar makers Bristol orchestra Colston Hall	Needs an oscilloscope etc to keep the learning focussed on science and engineering Richard Kan has donated the oscilloscope and has demo for Halls Effect Now need a slow motion camera	Discuss actions with Anna as she has list of contacts Ask BBC Nat Hist Unit for slow motion camera ?	Anna Farthing
Pin Hole camera workshop-	1hr 30 mins. sessions booked by schools / families		Rebecca prior
Wire automata – eg duck with feet	Could run this for Teachers CPD?		Rebecca prior

	This also links to the Olympic Machine -		
Animation station	or can we get Bristol Uni Involved – he attended first event Also – Aardman have exhibit in M Shed window Films@59 / Cod Steaks Curzon Clevedon have old projectors but will need funding	Talk to animations engineer from Bristol Uni Talk to Andy about old projectors	Rebecca prior
High Fliers –For KS3 ?	Session led by R-R Graduate Recruits for primary schools – Interactive play – 1 day 3 to 4 sessions in the day		Sean Connolly R-R Grads
Forces In Motion – For KS2	Session led by R-R Graduate Recruits for primary schools – Interactive play – 1 day 3 to 4 sessions in the day		Sean Connolly R-R Grads
Spaghetti Tower Challenge	Interactive Stall- 1 – 2 people running timed sessions for teams of engineers – Can add in the test of the shake table – use jelly babies or marshmallows as joins		Engineers Without Borders
Displays and workshops led by pupils/students			
Young Bristol – Young people talk to visiting groups about the bike/skate and cycling ramps – focus on their learning about engineering concepts and practicalities			
Flying Start Challenge Finalists Flying the winning gliders	Could be a challenge to fly across the dock	Talk with Sean	Sean Connolly (R-R Grads and apprentices)
Fantastic Challenge Finalists	Demonstration of winning cars racing – This is possible after 13 th June		Sean Connolly (R-R Grads and

			apprentices)
Waycroft Academy Sustainable Housing	Half days rotations of pupils as explainers Will this be ready by May?		Ellie Hand