INGENIOUS PROJECT

A volunteering project for Engineers

Over arching aims -

- **Inspire** creative public engagement with engineering projects
- **Stimulate** engineers to share their stories, passion and expertise in innovative ways with wider audiences
- **Develop** engineers' communication and engagement skills
- **Create** dialogue between engineers and people of all ages to raise awareness of the diversity, nature and impact of engineering.

Project objectives for Ingenious, M Shed, Bristol

- Build Bristol's team of active STEM Ambassadors with communications training for work in a museum setting
- Wider public engagement with engineering through young people's and the public's contact with the ambassadors
- Sustainable relationships between schools and engineering ambassadors
- Enthusiasm for engineering amongst school students
- Engineers and schools to develop new models for engineering communications and interpretation
- Develop resources for use at M Shed with schools, families and the public

Subsidiary messages - Engineering provides you with exciting opportunities anywhere in the world. *Through this Bristol project we want young people to be inspired to want to explore their future globally as well as locally*.

Outcomes – The impact we will measure

For Engineers

Awareness

New learning about how people engage with a museum and how its collection of objects, artefacts and pictures can be interpreted

Attitudes

That they can now use their professional work as something relevant to young people and their understanding of engineering as a career option

Skills

Increased communication skills through working closely with young people in formal education

For public

Awareness

Awareness of the impact of engineering on Bristol and how this is reflected in the museum collection

Attitudes

Increased appreciation of the importance of engineering to Bristol, past and present

For schools / young people / children

Awareness

Awareness of different areas of engineering work

Awareness of the impact of engineering on the development of Bristol in the past and today

Attitudes

Increased positive attitudes towards engineering careers

Increased enjoyment of engineering related subjects and activities

Inaugural Meeting - 5th March 2.15 - 5.45 pm

Context
The following stakeholders are bought together at this meeting-

1. **Engineering Industry Sector** – Delegates representing a wide range of specialist skills and stages in career development. Some delegates are volunteering as individuals while others are sponsored by their Businesses.

2. **Schools** – Lead teachers representing the phases of education from ages 7- 19

- Primary -Key Stage 2 (age 7 -11)
- Key Stage 3 (age 11-14)
- Key Stage 4 (age 14 -16)
- Post 16 and FE

3. **M Shed Museum** - Curators, Museum Education, Community Engagement.

Delegate lists are available in the Ingenious Project Workbooks

The meeting will be facilitated by -

- Hugh Thomas – My Future My Choice
- Anna Farthing – Harvest Heritage Films

The purpose of the meeting

1. Build the team
2. Scope the project
3. Create manageable project plans

Preparation for the meeting

Engineers -
- **Please bring an object or a picture that represents your skills and profession as an engineer**
- **If you use any educational resources with schools or the public please prepare a short explanation of these**

Teachers-
- **Please bring an object or a picture that represents the priority issue and one other issue that you want to address with the help of engineers in your school**
- **An overview of the school /year group diary and curriculum plans**

Museum Staff-
- **Please bring objects or pictures that represent resources for engineering (STEM) learning in M Shed or the locality**

AGENDA- 5th March – 2.15 for 2.30 start

M shed Museum Bristol
Princes Wharf Wapping Rd
Bristol BS1 4RN

2.15 Welcome – refreshments available from 2pm
Please collect a name badge and workbook

2.30 Introduction - Hugh Thomas

2.40 Communications training- introduction -Anna Farthing

3.05 Building project teams and plans

Teachers –Introduce themselves and their school and outline the area of the curriculum that they want to enhance, displaying an object or picture to represent what they need and the context.

Engineers and museum staff introduce themselves by placing their objects and pictures on the school's table where they think they could provide a solution.

Project teams formed

4.10 - Teams build 'Project Charters'

4.30 Plenary – feedback from five teams

4.50 Quick wins
Engineers and Museum staff inform of any additional support or existing educational engineering products that are easy to provide

5.05 Project planning

5.25 Round up, questions and next steps

Close 5.45

Project Team - Roles and Contact Details

M Shed

Hugh Thomas	Programme Lead My Future My Choice	hugh@myfuturemychoice.co.uk	0117 3290387
Louise Ormersher	Museum Learning Team Leader	louise.ormesher@bristol.gov.uk	0117 9223658
Sarah Crowder	Learning Officer	Sarah.crowder@bristol.gov.uk	0117 9038429
Andy King	Senior Collections Officer	andy.king@bristol.gov.uk	0117 9031569
Ben Mellor	Community Engagement Team	ben.meller@bristol.gov.uk	0117 9031565
Katie Lee	Development Manager	Katie.lee@bristol.gov.uk	0117 3525568
Anna Farthing	Harvest Heritage Arts and Media	anna@harvestfilms.co.uk	07968 814492

Schools

Joanne Horwood	Waycroft Academy	joanne.horwood@bristol.gov.uk	0117 3772198
David Avraamides Unable to join	*Begbrook Primary*	*davraamides@hotmail.com*	*0117 903 0386*
Chloe Price Unable to join	*Begbrook Primary*	*davraamides@hotmail.com*	*0117 903 0386*
Adam Loxton	Bristol Brunel Academy	aloxton441@bba.bristol.sch.uk	0117 377 2700
Maxim Hicks	Ashton Park Secondary School	maximhicks@ashtonpark.net	0117 3772777
Phoebe Wales	St Mary Redcliffe and Temple School	WalesP@smrt.bristol.sch.uk	0117 3772100
Joe Lund Unable to join	Perry Court Juniors	joe.lund@bristol.gov.uk	0117 3772078
Ben Meller	Youth Project		
Sarah Crowder	Landmarks project		

Engineers

Esme Loweth	Airbus	school.liaison@airbus.com	0117 936 7448
Anoop Kundi	Airbus	school.liaison@airbus.com	0117 936 8441
Jerry Henry	Airbus	school.liaison@airbus.com	
Philip Rowles	Claverham	philip.rowles@claverham.com	01934 835224
Bernard North	Claverham	bernard.north@claverham.com	01934 835224
Sean Connolly	Rolls-Royce	sean.connolly@rolls-royce.com	
Andrew Bacon	SEA	andrew.bacon@sea.co.uk	01373 852231
Stefano Matussi	SEA	Stefano.Matussi@sea.co.uk	01373 852309
Lorna Lewis	BAM	llewis@bam.co.uk	0117 9448800
Michele Cole	MIDAS	mcole@mi-spaceuk.com	0117 3052174
Ray Bassett	EMCOR	Ray.Bassett@emcoruk.com	07917 394207
Fabrice Lim Kong	Clarkebond Chartered Structural Engineer and member of the Institution of Structural Engineers)	FabriceLimKong@clarkebond.com	01179292244
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Dave Oyns	Arkwright Scholarship	doyns@hotmail.com	
Nick Howard	Bailey Caravans	nickh@bailey-caravans.co.uk	
Danya Walker	James Dyson Foundation	jamesdysonfoundation@dyson.com	01666 828001

Rebecca Prior	Artist / Technician	rebeccaleeanneprior@gmail.com	
Aysha Zahir	University of Bristol and member of Robogals	aysha@robogals.org.uk	
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Anna Cuanalo	University of Bristol and member of Engineers Without Borders	ac1372@my.bristol.ac.uk	
Tom Gardner	University of Bristol	tg0305@bristol.ac.uk	
Liow Shen Yan	University of Bristol	liow_shenyan@yahoo.com	
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Colin Dalton	University of Bristol – Computer Science	colin.dalton@bristol.ac.uk	
Russ Haines	Toshiba	Russell@toshiba-trel.com	
Felipe Ramos	Toshiba	Filipe.Ramos@toshiba-trel.com	
Fabia Pennington	AECOM	fabia.pennington@aecom.com	0117 9017000

Schools initial thoughts on their priority needs

Who	Activity	School /College
KS2 Year 5 (9-10 year olds)	Bristol (local history project) engineering architecture, landmarks, Suspension Bridge, SS Great Britain etc	**Requested bt Begbrook Primary** David Avraamides Chloe Price Ormesher Project will be run by Sarah Crowder and Louise from the museum
KS2 Year 4 7-8 year olds	Construct and fly a jet plane For our 63 Y4 pupils to complete a day workshop. To create a strong link with a local business and develop an understanding of the world of work in a scientific context.	**Waycroft Academy** Ross Moody
KS2	A n entitlement for all pupils in all years to meet and discuss the work of engineers as part of their curriculum	**Waycroft Academy** Jo Harwood
KS3 Year 8 (12-13 years old)	Adding to resources for metalwork project. Constructing dies for cutting steel sheet to make insect wing shapes.	**Ashton Park** **Max Hicks**
KS4 Year 10 (14 -15 year olds)	Centre lathe training. Due to limited machines in school it would be good to give them a chance to use a centre lathe. Maybe to make a handle for a drawer for their coursework, possibly something more advanced.	**Ashton Park** **Max Hicks**
KS4 Year 10 (14 -15 year olds)	BTEC construction course requires that the pupils have knowledge of a wide range of sections of the construction industry. Engineers could add some detailed knowledge and give pupils an opportunity to sample some skills.	**Ashton Park** **Max Hicks**
KS4 Year 10/11 (14 -15 year olds) Gifted and talented year 10 Students– they have finished their GCSEs. We can free up	A project which looks at the history of space exploration – from both: • Scientific/engineering perspective (the obstacles which had to be overcome to send the first rockets into space etc. • Curriculum links to A-level Physics – projectiles and escape velocity & GCSE Physics Force interaction pairs • A historical/political perspective (the	**Bristol Brunel Academy** **Adam Loxton**

time in school for them to work on the project.	space race, cold war etc.)	
Post 16	A-level Physics – projectiles and escape velocity	**Bristol Brunel Academy** **Adam Loxton**
Post 16	A level Physics – Electricity. Putting this in context using calculations, maximum power etc.	**Phoebe Wales** **St Mary Redcliffe & Temple School**
Ex-curricular/ Youth provision (14-21)	Engineering Sport. M Shed will have an exhibition looking at sport and the city throughout the summer. We will have a range of activities for visitors to engage with inside and outside of the museum. We would like to design and build some of these exhibits: A bicycle that can generate electricity to show archive films, a mini skateboard ramp in the shape of the Suspension bridge + any other feasible ideas.	**Onsite at M Shed.**

Schools expectations for partnership working with engineers?

Primary Schools

More expertise and greater bank of knowledge available, motivational for the children and engaging. Children should be able to obtain a better understanding of engineering and what it involves and why we need it.

To create a strong link with a local business and develop an understanding of the world of work in a scientific context.

To work with Bath Spa University students (Bath Spa has a close link with Waycroft and are represented on our governing body). We are keen for our pupils to have hands on experience, benefit from experts and be included in community projects.

Secondary Schools

The opportunity for pupils to work with engineers with strong skills and knowledge of tools and materials that we have limited access to in school time.

With only one centre lathe in the classroom it is very hard to get the pupils using it under supervision whilst also keeping the rest of the class busy on a different task. Access to additional machines or an expert who could work with one pupil at a time would create opportunities that would not otherwise be given.

Support from volunteer engineers who can share their expertise and insights with our students.

Raising aspirations of our most gifted and talented students by giving them a glimpse of where a STEM based education could take them.

Use of M-Shed as a resource for learning

To meet people who illustrate the context for the subject and show why they should bother studying it.

How do schools think they could share the learning?

Primary Schools

We would post photos and reports in the school newsletter and on the school website

On the school, website, in the school newsletter, on Merlin, the school's learning platform, through the local media. We would be excited about being part of the Cheltenham Science Festival.

Through the dissemination and support role of the Advanced Skilled Teacher

Secondary Schools

The school has an active website and school blog, also internal magazines that go out to parents.

If suitable it could be included in prospectus.

Using the students as ambassadors – through the media assets created by the students during the project (short films documenting their progress) which can be shared both with parents and the wider community (online etc.)

Also by using the strong links already available to share the outcomes with the other academies within the Cabot learning Federation

Project Charter

School	**Year Group(s) / Numbers of students or pupils**
Engineers /businesses contributing to the project(s)	
School Staff contributing to the project	
Vision statement for the project. "When this project is completed we will see.....	

Goal 1 - What will we produce for the School setting? **Completion Date**
Who leads on the work in the school setting? – (The Leader drives the project and will feedback progress) **Who is supporting this?**
Goal 2 -What will we produce that works in the Museum setting?
Who leads on the work for the museum setting? **Who is supporting this ?**

Quick wins – other engineering activities we think that could be used within our project and who to contact.

Who leads on this?

Next steps		
What	**Who**	**By When**
Project t team contact details and preferred methods and times are shared.	All	End of meeting on 5th March
Email copy of project charter To - hugh@myfuturemychoice.co.uk		10th march

An overview of the workflow. Not all people can complete all tasks and dates may need to change

Date	Activity	Purpose
Monday 5th March 2.15 pm – 5.45pm	**Core Team initial meeting** **M Shed**	• Introduce all • Project mission and process • Outline of training and media production • Un pack the schools needs • Find out what media assets are useful to schools • Overview of available museum artefacts and projects • Review fit with existing projects • Division of labour – allocation of tasks- Diary setting • Setting of deadlines and dates – teachers and volunteers exchanging contact details and best methods of communication • Team building – create a 'team charter' • Exercise in communications
Friday 23rd March 1.30pm – 5.45pm	**Communication Training Creative planning and design Workshop** **M Shed**	• Communication and presentation skills training • Sub groups research – creative ideas workshops • Re-visit team roles and responsibilities
23rd– March through to 7th May	5 project teams run own meetings to progress project Autonomous groups	• Sub groups or engineers focussed on themes and outcomes with one school setting • School 'recci' visits possible
23rd– March through to 7th May	Communications Training	• Optional- to attend sessions with Anna Farthing for communications s training and media production. Anna will offer set days based at the museum for teams to book into.
23rd – March through to 7th May	Engineers make School visits	• Testing ideas and products in schools • Relating ideas and product to pre and post learning in the classroom
23rd– March through to 7th May	Promotion by M Shed	• Sign up schools as visitors for Immersive weeks and science and career s fair

8th May 2pm start	**Core Team Meeting** **M Shed**	• Review progress • Pulling together outcomes for Immersive Week 1 (KS2 an d 3) • Logistics and staffing for Immersive Week 1 • Communications of plans to Anna by each group
15th May - 19th May 9am – 4pm daily	**Immersive Week One** **M Shed**	• Run sessions • Run evaluation activity
28th May – 2pm to 5pm	**Review meeting and Core Team Meeting** **M Shed**	• Review Immersive Week One and the evaluations • Review progress with secondary projects • Pulling together outcomes for Immersive Week 2 (Secondary KS4 and 5) • Logistics and staffing for Immersive Week 2
28th May – 9th July	5 project team. Workshops to progress project and additional training	• Small groups focussed on one theme and outcome with one school setting •
28th May – 9th July	Communication training	• Optional to book in sessions with Anna Farthing for communications s training and media production. Anna will offer set days based at the museum
28th May – 9th July	School visits still possible to secondary school	• Testing ideas and products in schools • Relating ideas and product to pre and post learning in the classroom
28th May – 9th July	Continued Promotion by M Shed	• Sign up schools as visitors for Immersive weeks and Engineering careers fair
9th July 2pm to 5.45pm	**Core Team** **M Shed**	• Final Planning and preparation for Immersion Week Two
10th -14th July – 9am to 4pm daily	**Immersive Week Two** **M Shed**	• Run sessions • Run evaluation activity
23rd July 3.30pm – 5pm	**Core Team meet De brief** **M Shed**	• Review evaluations • Planning and preparation for Engineering /Careers Fair • Exploring potential

		• Logistics for additional business /sector support for the fairs •
23rd July to 20th Sept	Preparation As required	• Mobilising additional business support for Science Careers Fair
23rd July to 20th Sept	Continued Promotion by M Shed	• Sign up schools as visitors for Engineering • Science and Career s Fair
20th 21ST 22nd Sept 9am – 4pm daily	**Engineering and Science Careers Fair** **M Shed**	• Run sessions • Run evaluation activity • FILMS FOR SCREENINGS
27th Sept	**Celebration event for core team** **M shed**	• Evaluation and final report issued • PR outcomes, media assets and impact is shared celebrated • Agreed process, roles and responsibilities for sustaining the activity

Keeping in touch with the project

Updates and news will be shared on line

http://www.myfuturemychoice.co.uk/blog/article/2012/02/news-and-updates-for-ingenious-projects.html

Email information to **hugh@myfuturemychoice.co.uk**

T.0117 3290387

Notes

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Evaluation one. Initial meeting project set up and expectations

Please circle one –

1. I represent - **Schools , M Shed, Engineering Sector**

2. Expectations of impact

My knowledge*and skills* will be enhanced by this project *Communication with young people and public* *Engineering* *Interpretation and use of museum's collections*	Yes	No

This project will further the interest and understanding of engineering for young people	Yes	No

This project will create sustainable links and relationships between schools, museum, businesses and universities	Yes	No

This project will create new and sustainable resources for learning in schools and/or museums	Yes	No

3. What area do you feel you need most support?

4. What do you see as the main threats to success for this project?

5. What are you looking forward to the most?

6. Rate the project so far -

Would you recommend this project to a friend /colleague	Yes	No

Additional comments over leaf