

Activity Model 1: *Who's Who?*

Via STEMNET we aim to inspire young people about STEM and enable them to develop their confidence, creativity, problem-solving and employability skills.

What are STEM Ambassadors?

STEM Ambassadors are volunteers of all ages and STEM backgrounds from apprentices to geologists and nuclear physicists to zoologists.

Have they received any training to work in schools?

All STEM Ambassadors are registered, enhanced CRB checked and have each received an induction into working in the classroom.

What can they do?

Lots! STEM Ambassadors can get involved in giving careers talks, helping out with STEM Clubs, running workshops in local schools & lots more.

How much do Ambassadors cost?

Absolutely nothing.

How do I access Ambassadors?

Simply contact **STEMFirst** we are looking forward to hearing from you.

Web: www.stemfirst.com

Email: contact@stemfirst.com



Use *Who's Who* to let your students find out more about STEM Careers and the real people behind the 'Job Titles'.

This session allows students to interact with our inspirational role-models, ask questions, find out more about these real people and why they have chosen their given career.

Do you know where a career in STEM will lead?

This session covers:

- ✓ *Who am I? – 20 Questions*
- ✓ *'This is me' – Ambassador Presentation*
- ✓ *Routes into the Profession*
- ✓ *Hands-on mini-challenge*

Age Range: KS2 – KS5

Time Requirement: 1 hour

Suitability: STEM Lesson, PSHE, Careers

Extension: STEM Leaders Award,
Ambassador Industry research,
FutureMorph Investigation

Activity Model 1: *Who's Who?*

Ambassador

Check-list

- ✓ **Inform STEMFirst of your activity.**
It is essential that you inform STEMFirst of ANY activity with schools. You are only covered by STEMNET's insurance if we are notified.
- ✓ **Lead teacher contact details**
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- ✓ **Risk Assessment for activity (if required)**
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Description:

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This session allows students to interact with our inspirational role-models, ask questions, find out more about these real people and why they have chosen their given career.

Session overview: 1 hour Duration

Who am I? – 20 Questions

Students have to guess your job function/industry and job title in less than 20 questions or give them 20 multiple choice questions on your history / fantastic facts.

'This is me' – Ambassador Presentation

Ambassadors to illustrate to students what they actually do. This can take the form of PowerPoint, a day in the life, a career-map or video/product presentation with hardware or multi-media.

Routes into the Profession

It is important to illustrate the route the Ambassador has taken into his/her profession. Have examples of the different career paths some of your colleagues have also taken.

Hands-on mini-challenge

Undertake a mini hands-on challenge which either illustrates your job, your industry OR generically your profession. This can be very simple and be built around making bridges, paper structures, brain storming, or undertaking a real-life problem solving exercise.



Examples of mini-challenges can be found at:

Science Museum

www.sciencemuseum.org.uk/educators/classroom_and_homework_resources.aspx

CREST Pick up and Run Projects

<http://www.britishecienceassociation.org/web/ccaf/CREST/Link+Schemes+and+Project+Ideas/Pick+Up+and+Run+Projects.htm>

Practical Action - The Squashed Tomato Challenge

<http://practicalaction.org/squashed-tomato-challenge-5>

Why not Chem Eng? Flash Bang Challenges

www.whynotchemeng.com/wnce_home/Teachers/Top%20Ten%20Flash%20Bang%20Demos.aspx

Dyson Engineering Challenges

<http://media.dyson.com/downloads/JDF/drawing/challenges.pdf>

Activity Model 2: *Design it, Make it, Improve it*

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How much do Ambassadors cost?

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Many of our Ambassadors work designing, improving and producing a wide range of products for many areas of life.

Aircraft, medical devices, computer games, food, energy, cars, artificial limbs, furniture, music, entertainment equipment and environmental products are just some of the products made on our doorstep.

In ***Design It, Make It, Improve It*** students find out more about product design and the role of the people involved in creating and making 'stuff'.

- ✓ *Look at products we make in the NW and find out how it is done.*
- ✓ *How would you make something better?*
- ✓ *Improve the functionality of everyday objects with help from a Designer.*


Age Range: KS2 – KS5

Time Requirement: 1 - 2 hours

Suitability: STEM Lesson, Careers, STEM Clubs

Extension: Make IT NW, CREST Awards, STEMChallenges

Activity Model 2: *Design It, Make It, Improve It*



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Description:

We know that many of you work designing, improving and producing a wide range of products for many areas of life.

In *Design It, Make It, Improve It* Ambassadors can help students find out more about product design and the role of the people involved in creating and making 'stuff'.

Session overview: 1-2 hours Duration

The North West – What exactly do we do here?

Brainstorm what the students think manufacturing means and what are 'products'.

Students have to guess your job function/industry and job title in < 20 questions.

Then show the NW Products PowerPoint as supplied by STEMFirst.

Which Came First

Undertake Which Came First Quiz and use as a discussion point.

Product Design and Me

Ambassadors to illustrate to students what they actually do. This can take the form of PowerPoint, a day in the life, a career-map or video/product presentation with hardware or multi-media.

Change it for the Better

Ambassadors then work with students to look at everyday objects, to discuss their design and to look at how they would change the functionality / improve the design. The design , manufacturing and production process can be discussed as can JUST IN TIME, QUALITY, PRODUCTION UNITS and PRODUCT TESTING dependent on the STEM Ambassadors background and experience.

How would you redesign your ipod? Phone? Sports Equipment? Use the 'STEMFirst Change It' pro-forma supplied by STEMFirst.



Manufacturing Facts and more information can be found at:

Make IT Campaign – www.makeit.org.uk/home/

Use the 'Organisation of Production Interactive tool' (found under teacher resources)

'Which Came First' Interactive Quiz supplied by STEMFirst

STEMFirst Change It Pro-Forma

Resource Bank at STEMNetworking <http://networking.stemnet.org.uk/>



Activity Model 3: Careers Cascade

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What can you do with Maths? How about naming several Science careers or listing Technology jobs?

We are all limited by our own experiences, but the breadth, variety and diversity of our STEM Ambassadors enables students to gain knowledge of a wider range of careers than ever before.

Careers Cascade enables a snapshot view of many different careers to be gathered, either focussed across STEM or specific to a subject or industry sector.

How would you find out about someone's job if you only had 5 minutes? What would you ask and what would you want to know?

- ✓ Meet a Range of STEM Ambassadors.
- ✓ Ask those questions you always wanted to ask about real working life.
- ✓ Understand the range of jobs STEM education can lead to.

Age Range: KS3 – KS5

Time Requirement: 1 - 2 hours

Suitability: Lessons, Careers, STEM Days, Yr9 Options

Extension: Make IT NW, STEMFirst Careers Investigations, STEM Leaders, University / College Visits



Activity Model 3 : Careers Cascade

Ambassador

Check-list

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Careers Cascade enables a snapshot of different careers to be gathered, either focussed across STEM or specific to a subject or industry sector.

*How would you find out about someone's job if you only had 5 minutes?
What would you ask and what would you want to know?*

This session allows students to interact with Ambassadors, ask questions, find out more about you and why you have chosen your given career.

Session overview: 1-2 hours Duration

Brainstorm of STEM Perceptions and Careers

Students use post it notes to brainstorm:

- ✓ Words/phrases to describe STEM Career
- ✓ Guess the job titles / industry sectors of the Ambassadors

Hot Seat Q&A Session with Multiple Ambassadors

Start session by posing the question – 'what would you like to know?' and put selection of questions on the whiteboard / flip chart.

Hot seat with students moving around different Ambassadors, 5 minutes with each. Students freely ask questions/use the whiteboard examples.

Students share 'surprising/interesting facts' with the rest of the group.

Ambassador Stands and Find out More

Ambassadors to bring pictures / information / objects from their industry.

toolkit

Why not use resources from Professional Bodies or Careers websites to create your 'stand' ?

Chemical Engineering www.whynotchemeng.com/

Maths Careers www.mathscareers.org.uk/

Manufacturing Careers www.makeit.org.uk/home/

Aerospace Careers www.careersinaerospace.com

NHS Careers www.nhscareers.nhs.uk/

So What is Engineering? www.tomorrowsengineers.org.uk/resources.cfm

Activity Model 4 : *Virtual Visitor*

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What can they do?

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How much do Ambassadors cost?

Absolutely nothing.

How do I access Ambassadors?

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E-Mail, Twitter, Blog, Skype - technological advances mean the way we communicate is continually changing.

Virtual Visitor enables students and teachers to use technology to access our STEM Ambassador's more frequently and simply.

Linking to a STEM Ambassador via Skype, E-mail or Video-conferencing has many advantages and can allow sustained involvement of Ambassadors with schools.

- ✓ Interview Ambassadors remotely.
- ✓ Enable mentoring of project and students.
- ✓ Illustrate the benefits of video-conferencing & how industry and business use virtual applications to reduce the time and cost impact of meetings.

Age Range: KS2 – KS5

Time Requirement: 10 minutes to 1 hour


Suitability: STEM / IT / Careers Lessons

Extension: STEM Careers Investigations, STEM Leaders Awards, HiddenScience



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Activity Model 4 : *Virtual Visitor*



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Description:

Virtual Visitor enables students and teachers to use technology to access STEM Ambassador's more frequently and simply.

Linking to a STEM Ambassador via Skype, E-mail or Video-conferencing has many advantages and can allow sustained involvement of Ambassadors with schools.

Session Duration: 10 mins to 1 hour

Interview Ambassadors remotely.

Use Skype or Video-conferencing to link directly into the classroom. Ensure that you have tested the connection with the teacher prior to the session!

This session could be a short informal Q&A session or the students could have been supplied with your industry sector & job title prior to the session and have had chance to research your company and have pre-prepared specific questions.

The remote interview could be submitted by the students to qualify for the Primary Engineer STEM Leaders Award.

Students can use the STEMFirst 20 Questions Sheet as a starting point.

Enable mentoring of project and students.

To support on-going projects STEM Ambassadors could link into STEM Clubs or could set a real-life problem for students and then have short 'review' audio/video conferences on several occasions.

Illustrating the benefits of video-conferencing.

Student's knowledge of the business environment is limited. It would be useful to highlight how industry and business use virtual applications to reduce the time and cost impact of meetings. Do you use IT to facilitate meetings, conferences and to share data? Use your real life experiences and examples with the students



Primary Engineer Leaders Award

www.leadersaward.com/index.php?option=com_content&view=article&id=7&Itemid=12

STEMFirst Twenty Questions - STEMFirst

Activity Model 5 : *Project STEM*

Via STEMNET we aim to inspire young people about STEM and enable them to develop their confidence, creativity, problem-solving and employability skills.

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What can they do?

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How much do Ambassadors cost?

Absolutely nothing.

How do I access Ambassadors?

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The range of STEM Projects schools can get involved in is vast. The projects are as diverse as the range of STEM Careers, Industry Sectors and STEM job opportunities available!

Project STEM enables schools to 'join the dots' between STEM projects and embed Ambassador support into schools in order to develop a sustainable, effective, curriculum enrichment and STEM Engagement programme.

Project STEM works in two ways:

- 1) Requests from schools for STEM Ambassador specific experience.
- 2) STEM Ambassador 'real-life' projects to enable schools to put the curriculum/their ideas into context.

Age Range: KS2 – KS5


Time Requirement: 1 hour – Several Weeks

Suitability: Lessons, STEM Clubs, STEM Days

Extension: CREST Awards, Young Engineers, National Science and Engineering Competition, Industry Visits.



Activity Model 5: **Project STEM**



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Description:

Project STEM enables schools to 'join the dots' between STEM projects and embed Ambassador support into schools in order to develop a sustainable, effective, curriculum enrichment and STEM Engagement programme.

Session overview: 1 hour – Several Weeks

Project STEM works in two ways:

Requests from schools for STEM Ambassador specific experience.

STEM Ambassador 'real-life' projects to enable schools to put the curriculum and their project ideas into context.

Calling All Ambassadors

Schools often tell us they are looking for real-life projects, or opportunities for students to have hands-on problems with a real context.

Take a moment to look at your job:

- ✓ Are there any projects that students could work on similar to your real work?
- ✓ Have you any problems to solve that could do with a fresh-eyes approach?

If so we want to hear from YOU!

Send your ideas to us at **STEMFirst**, upload your ideas to **STEMNetworking** or give us a call and we will either help fix you up with a school desperate for a challenge or facilitate the use of your ideas within **STEM Clubs**, **CREST** Projects or school lessons.



STEM Clubs

<http://www.stemclubs.net/projects/>

CREST Awards – Project Ideas

<http://www.britishtscienceassociation.org>

National Science and Engineering Week (NSEW)

http://www.thebigbangfair.co.uk/nsec/the_competition_2011-12.cfm

STEMNetworking – Resource Bank

<http://networking.stemnet.org.uk/>



Activity Model 6: *Fantastic Facts*

Via STEMNET we aim to inspire young people about STEM and enable them to develop their confidence, creativity, problem-solving and employability skills.

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What can they do?

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How much do Ambassadors cost?

Absolutely nothing.

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Rather than thinking carefully about the world around us, we all take things at face value and rarely see or understand what actually goes into making our world.

From the food we eat, the clothes we wear, the recreational activities we undertake through to the medicine, machines and gadgets we use – it is STEM that supports 21st Century Life.

Fantastic Facts illustrate the details of STEM, giving students an appreciation of the statistics, costs, careers and advances in understanding that goes into producing real-life as we know it.

- ✓ Lancashire Professions and STEM Careers
- ✓ Manufacturing statistics and product design facts
- ✓ STEM Job Prospects, National Statistics and Salary Expectations
- ✓ The facts behind 'What goes into making.....?'

Age Range: KS3 – KS5


Time Requirement: 1 - 2 hours

Suitability: Lessons, Careers, STEM Days, Yr9 Options

Extension: Make IT NW, STEMFirst Careers Investigations, STEM Leaders Awards, HiddenScience, University / College Visits



Activity Model 6: *Fantastic Facts*



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Description:

Fantastic Facts illustrates the details of STEM, giving students an appreciation of the statistics, costs, careers and advances in understanding what goes into producing real-life as we know it.

From the food we eat, the clothes we wear, the recreational activities we undertake through to the medicine, machines and gadgets we use – it is STEM that supports 21st Century Life.

Session overview: 1- 2 hours Duration

Ambassador Presentation

Ambassadors illustrate to students what they actually do and where they work.

Illustrate the careers locally and if you are part of a supply chain, the range of employers connected to your industry that all work towards producing the end product. This can take form of PowerPoint, a day in the life, a career-map or video/product presentation.

What goes into making.....?

Use manufacturing statistics and product design facts to illustrate what goes into making the things around us. Ambassadors can bring in an object from their work and use as a discussion point. Include technical, cost, durability and problem solving issues.

Use the Small Is.....Technology Timeline to illustrate historical inventions and developments and support students in undertaking the **Small Is Challenge**. Look at *Where Science and Maths will take you* by FutureMorph.

Hidden Science

Use live IT or print-screen to illustrate to students the type of STEM individuals and companies that are operating in their postcodes.



2011 STEM Fantastic Facts

http://www.careercompanion.co.uk/files/page_element/STEM_Facinating_facts-0.pdf

Hidden Map of Science – IT tool to find STEM Professionals hiding in any neighbourhood <http://www.hiddensciencemap.org/>

Small Is Challenge & Where Science Maths will take You– From STEMFirst

Leading Lights – Posters available from STEMNET via STEMFirst

<http://www.stemnet.org.uk/list/1>

STEM Facts appealing to students

<http://www.sciencekids.co.nz/sciencefacts.html>



Activity Model 7: **Not For Girls**

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Science is too difficult?

Technology is for geeks?

Engineering is not for girls?

Maths is boring?

STEM Ambassadors, as well as providing inspirational insight into careers, professions and job opportunities, are a useful resource with which to challenge traditional stereotypes about the nature of certain jobs and the type of people working in STEM.

Not For Girls aims to challenge stereotypes and can be tailored to tackle a range of misconceptions:

Gender	Ethnicity	Job Definition
	Background	Ability

Age Range: KS3 – KS5

Time Requirement: 1 - 2 hours

Suitability: Lessons, Careers, STEM Days, Yr9 Options

Extension: Make IT NW, STEMFirst Careers Investigations, HiddenScience, University / Industry Visits



Activity Model 7: *Not For Girls*

Ambassador

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Description:

*Science is too difficult? Technology is for geeks?
Engineering is not for girls? Maths is boring?*

STEM Ambassadors, as well as providing inspirational insight into STEM careers, can support the challenging of traditional stereotypes about the type of jobs and people in STEM.

Not For Girls aims to challenge stereotypes and can be tailored to tackle a range of misconceptions whether it be *Gender, Ethnicity, Job, Background or Ability*.

Session overview: 1 - 2 hours Duration

The session can either focus on a stereotype as specified by the teacher or look at stereotypes in general and our attitudes to STEM jobs and STEM industry. Schools may ask for a specific group of Ambassadors in order to illustrate that jobs are not only for one group of the population.

'This is me' – Ambassador Presentation

Ambassadors to illustrate to students what they actually do. This can take the form of PowerPoint, a day in the life, a career-map or video/product presentation.

What is a stereotype?

Brainstorm with students / post it notes what we mean by stereotypes, the different groups that can be stereotyped and jobs that stereotypically go with a certain group of people.

What S, T, E, M individuals can you think of in the media?

Have a look at how Scientists are portrayed in the media and use 'Einstein wore AllStars' to discuss.

What do people think when they hear the word 'Scientist' or 'Engineer'?

Discuss with the group '*Do you agree that science has an image problem?*'

How would the students improve STEM's image and how you would 'sell' engineering or science to the next generation.



The Values Game and **What might you be?** on Future Morph

www.futuremorph.org/search.cfm?widCall1=customWidgets.contentItem_show_1&cit_id=4326

WISE – Postcards from the Future

http://www.wisecampaign.org.uk/girls/postcards_from_the_future.cfm

Women in Science and Engineering (WISE) – Use Mindmap Resources

<http://www.wisecampaign.org.uk/>

STEM Equality and Diversity Toolkit helps organisations to present STEM careers to the broadest spectrum of society.

<http://www.stem-e-and-d-toolkit.co.uk>

Activity Model 8: *One without the other*

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"I don't need Maths to be an Engineer."

At school subjects can often seem quite independent from each other.

One without the other illustrates the strong links between Science, Technology, Engineering and Maths and helps highlight how much of an overlap there is in many STEM jobs between these four subjects.

- ✓ How much Maths is involved in any job?
- ✓ Like a selection of subjects? Investigate which job would tick all your boxes.
- ✓ How useful is what you learn in school STEM, and how is it applied in real jobs?

Age Range: KS3 – KS5

Time Requirement: 1 - 2 hours


Suitability: Lessons, Careers, STEM Days, Yr9 Options

Extension: Make IT NW, STEMFirst Careers Investigations, HiddenScience, STEMClub Projects, University Visits, Industry Visits, Young Engineers, STEM Leaders Award



**STEM
AMBASSADORS**
ILLUMINATING
FUTURES

Activity Model 8: *One without the Other*



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Email: contact@stemfirst.com

Description:

"I don't need Maths to be an Engineer."

At school, subjects can often seem quite independent from each other.

One without the other illustrates the strong links between Science, Technology, Engineering and Maths and helps highlight how much of an overlap there is in many STEM jobs between these four subjects.

Session overview: 1 – 2 hours Duration

How much S,T,E or M is involved in any job?

Talk to students about your job and the S, T, E and M aspects of it.

How useful is what you learn in school STEM and how is it applied in real jobs?

Can you remember what you learnt at school – what do you use everyday?

Hands-on mini-challenge

Undertake a mini hands-on challenge which either illustrates your job, your industry OR generically your profession. This can be very simple and be built around making bridges, paper structures, brain storming, or undertaking a real-life problem solving exercise. HIGHLIGHT to the students the different skills / subject areas they use.

What Science, Technology, Engineering, Maths did they use? Get them to write on post-its and put on wall under these 4 headings.

The Engineering and Physical Sciences Research Council (EPSRC) website has some simple hands on experiments you can do with the students or make your own.

DON'T FORGET YOUR RISK ASSESSMENT



EPSRC Activities - Hands on Challenges that students assess for S,T,E & M
<http://www.epsrc.ac.uk/newsevents/experiments/Pages/default.aspx>

Wake up to your future with Science and Maths

http://www.biochemistry.org/Portals/0/Education/wake_up_to_your_future%20Science%20Council.pdf

Dyson Foundation Mini-Challenges

<http://media.dyson.com/downloads/JDF/drawing/challenges.pdf>

So What is Engineering?

www.tomorrowengineers.org.uk/resources.cfm



**STEM
AMBASSADORS**
ILLUMINATING
FUTURES

Activity Model 9: *Relative Role-Models*

Via STEMNET we aim to inspire young people about STEM and enable them to develop their confidence, creativity, problem-solving and employability skills.

What are STEM Ambassadors?

STEM Ambassadors are volunteers of all ages and STEM backgrounds from apprentices to geologists and nuclear physicists to zoologists.

Have they received any training to work in schools?

All STEM Ambassadors are registered, enhanced CRB checked and have each received an induction into working in the classroom.

What can they do?

Lots! STEM Ambassadors can get involved in giving careers talks, helping out with STEM Clubs, running workshops in local schools & lots more!

How much do Ambassadors cost?

Absolutely nothing.

How do I access Ambassadors?

Simply contact **STEMFirst** we are looking forward to hearing from you.

Web: www.stemfirst.com

Email: contact@stemfirst.com



The major influence on young people are those close to them – their parents, carers, relatives and friends.


In order to make informed choices those influences need to be positive ones.

Relative Role-Models enables young people to meet a range of positive role models, to allow parents and carers to get involved with their children's school STEM programme and to allow students with limited or narrow access to STEM professionals to learn more about real-world jobs, careers and STEM opportunities.

- ✓ Raise support for YOUR school
- ✓ Support disadvantaged groups
- ✓ Widen horizons of students and young people
- ✓ Capitalise on local knowledge and experience

Age Range:	KS1 – KS5
Time Requirement:	1 - 2 hours
Suitability:	Lessons, Careers, STEM Days, Yr9 Options
Extension:	STEM Leaders Awards, HiddenScience, University / College Visits, STEM Projects

Activity Model 9: *Relative Role-Models*



**Ambassador
Check-list**

- ✓ **Inform STEMFirst of your activity.**
It is essential that you inform STEMFirst of ANY activity with schools. You are only covered by STEMNET's insurance if we are notified.
- ✓ **Lead teacher contact details**
STEMFirst will provide all teacher contact details for activities organised through ourselves.
- ✓ **Risk Assessment for activity (if required)**
Risk Assessments need to be completed and signed by yourself and the lead teacher.
- ✓ **Feedback Form**
Please complete the feedback form on the CONTACT page of our website.
- ✓ **Record Activity on STEMNET Database**
Please record your activity on your profile / STEMNetworking or send us details so we can do it for you.

Contact **STEMFirst** if you have any questions:

Web: www.stemfirst.com

Email: contact@stemfirst.com

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Bespoke School Support

Via working with specific schools STEMFirst will facilitate the promotion of STEMNET and the STEM Ambassador programme to parents, carers and other friends / relatives of pupils at that school.

STEMFirst will provide induction to all interested parties and undertake their Enhanced CRB checks.

Working with schools STEMFirst will support their engagement in STEM and facilitate the deployment of those Ambassadors with affiliation to that specific school.

A bespoke engagement plan will be put in place to enable schools to maximise the benefit of having STEM Ambassadors working in their schools.

'This is me' – Ambassador Presentation

Ambassadors should aim to illustrate to students what they actually do, who they are and their links to the school. This can take the form of PowerPoint, a day in the life, a career-map or video/product presentation and should focus on the 'personal side'. Why not give an overview of what you wanted to be when you were their age? Can you remember your 'light bulb' moment or when you were first switched on to STEM or the job you are in?



STEMFirst - Facilitation of links between identified Ambassadors and identified Schools

STEMFirst Ambassador Models – Use of all Ambassador usage models for ideas on how to raise STEM activity in identified Schools.

STEMNetworking to illustrate STEM Activity and raise Schools profile

<http://networking.stemnet.org.uk/>

Future Morph STEM Careers Activity Pack for Parents -

http://www.futuremorph.org/search.cfm?widCall1=customWidgets.contentItem_show_1&cit_id=4956