**The IET**

**In partnership with**

****

**2020-21**

**Participating Schools**

**Briefing Pack**



**With thanks to our supporters and sponsors…**



### **Keith Thrower OBE FREng FIET**

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**IET Faraday**

The Institution of Engineering and Technology (IET) is working to engineer a better world. Our heritage dates back to 1871, and today our mission is to inspire, inform and influence the global engineering community, supporting technology innovation to meet the needs of society.

The IET produces a wide range of engineering-themes resources and activity days for STEM teachers (Science, Technology, Engineering and Maths). Our resources allow teachers to give practical and real-life context to their lessons both in the form of our award-winning STEM resources and Faraday Challenge Days [www.theiet.org/education](http://www.theiet.org/education).

**Jack Petchey Foundation**

Who is Sir Jack Petchey CBE?

Jack Petchey CBE left school at 13 and in his first job was told by his

boss that he was “not management material”. Using the small amount

of money he received after leaving the Royal Navy, Jack started a car

hire company. Starting with one car he built a fleet. Eventually he

became a self-made millionaire owning multiple businesses. Jack, now

in his 95th year, has lived his life by the motto, ‘If you think you can,

you can.’ He wants young people to believe this also – so he established

the Jack Petchey Foundation which has now invested over £133 million in

projects supporting young people to believe in themselves and make the

most of life’s opportunities.

When the Jack Petchey Foundation started our partnership with the Institution of Engineering and Technology Jack said "When I was at school I didn’t really understand the importance of Maths and Engineering, however I now know that it just wouldn’t have been possible to achieve in the business world without a good understanding of mathematical principles, and working in property development, I can see how much would not be possible without Engineers. I encourage you all, not to see maths, engineering and science as mysteries, but to embrace the numbers and ask as many questions as you need to fully understand them. Explore how these subjects can form the basis for so many aspects of life around us. If you think you can't understand a technical problem - you won't be able to - because you shut your mind, however if you open your mind, and think that you can do it....you will be able to!"

For more information on the Jack Petchey Foundation and the various programmes it supports please visit [www.jackpetcheyfoundation.org.uk](http://www.jackpetcheyfoundation.org.uk)



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5. **Welcome**

We are pleased that you have been selected to attend one of the IET Faraday Challenge Days. We are really looking forward to working with your students and this information pack provides important information about the day. We would be grateful if you could read it carefully to make sure everything is in place for a fantastic Challenge Day.

This year there will be a total of 130 IET Faraday Challenge Days taking place between January 2020 and June 2021 in schools across the United Kingdom. Each IET Faraday Challenge Day involves six school teams, each made up of six 12-13 year olds (England and Wales Year 8, Scotland S1/S2, Northern Ireland Year 9), ideally students who are interested in either Science, Design & Technology, Mathematics or Engineering.

The Challenge Days are provided free of charge as part of a national competition. On the day of your challenge, the winning team from each event will be awarded a prize for each team member and a trophy for their school. They will also go onto our school league table and, at the end of the year, the top teams will be invited to a national final in July. Teachers are not allowed to help their students but, if you and any visiting teachers want to take part in the challenge, you can form a team and be entered onto our teachers’ league table.

By taking part in a Challenge Day, your students will receive an Industrial Cadets Challenger Award for completing a hands-on problem solving and critical thinking activity. Industrial Cadets is run by the EDT (Engineering Development Trust) and works with UK employers to create a talent pipeline and a future skilled workforce, whilst helping young people to develop the skills they need to enter industry with confidence. For more information go to: <https://www.industrialcadets.org.uk/>.

Students will also be eligible to receive a CREST Discovery Award from the British Science Association. CREST Discovery recognises quality STEM project work that is done over a short period of time (usually a day). It focuses on fun, teamwork and transferable skills, whilst putting projects into a real-world context. This is optional and will need to be applied for online. The only evidence you will need to provide for students to get this award will be the student certificate. For more information go to: <http://www.britishscienceassociation.org/crest>.

If you are interested in running your own DIY Faraday Challenge Day then visit [www.theiet.org/education](http://www.theiet.org/education) for more information and free resources. There are currently 12 DIY secondary and 2 DIY primary challenges to choose from which get students using key STEM skills and knowledge and encourage the development of students’ problem solving, team working and communication skills.

1. **What do you need to do?**

We want you and your students to have a fantastic IET Faraday Challenge Day and we hope the following will help you prepare for the day.

* Check with other staff that your school is only attending one Faraday Challenge Day. If schools enter teams in more than one Challenge Day their scores will not be included in the competition.
* Ensure that you, your students and your school are aware of the Faraday Challenge timetable as this may differ from the ordinary school timetable.
* Arrive by 9.15 am so that the Challenge Day can start on time and note that the end time of the day is 3.00 pm.
* Organise a team or teams from your own school of six students, aged 12-13 years old, to take part in the Faraday Challenge Day – ideally made up of students who are interested in either Science, Design & Technology, Mathematics or Engineering; an even number of boys and girls where possible. Please do not bring any more than your allocated number of teams as we will not be able to accommodate them.
* Provide a member of staff to accompany the students on the day. Teachers are not able to assist their teams during the event. You will be encouraged to form a teachers’ team and participate in the Faraday Challenge, however, you may wish to bring work with you if you do not wish to take part.
* Please note that teachers are responsible for the discipline and safe working of their students and must remain with their students throughout the day. The IET may charge schools for breakages which result from unsafe or inappropriate behavior.
* Ensure that the participating students:
* bring a packed lunch to the Faraday Challenge Day
* bring a pen/pencil/pencil case.

**IMPORTANT**

Please inform the host school if you are unable to attend the Faraday Challenge Day as soon as possible. If host schools do not have enough teams attending and need to cancel less than 28 days before the Challenge Day they will be charged any associated expenses. It is unlikely that we will be able to postpone a Challenge Day as the Faraday calendar is very busy and we are often only in a geographical area for a limited period.

If you are unable to attend on the day please let the host school know as we may delay the start to wait for your arrival.

**3. Schedule for the day**

|  |  |
| --- | --- |
| **08:00** | Challenge Leader arrives to set up |
| **09:15** | Register your team (All visiting schools should have arrived by this point) |
| **09:30** | Welcome and introduction |
| **09:50** | **Project brief:** Introduction to the Faraday Challenge |
| **10:10** | **Planning:** Identifying the problems and generating initial ideas |
| **10:25** | **Team role selection:** team decides on which roles they need |
| **10:30** | **Engineering apprenticeship:** teams complete a short engineering task |
| **10:40** | **Development**   * Shop opens * Agree on final product designs |
| **11:00** | **Break** |
| **11:10** | **Development continues**   * Continue to design and modify where necessary * Record progress in event log |
| **12:15** | Teams are briefed on the content of the presentation |
| **12:30** | **Lunch** – Tools down |
| **13:00** | **Development: Final preparations**   * Finalise product * Prepare presentation with notes |
| **13:30** | * Shop closes * Submit accounting sheet to the Shop keeper * Practise presentation |
| **13:50** | **Presentation**   * Teams present their designs to the judge(s) |
| **14:45** | Award ceremony with final feedback and evaluation of the day |
| **15:00** | Engineering teams depart |
| **15:45** | Challenge Leader departs by this point (actual time depends on pack up requirements) |

# 4. Risk Assessment

The following risk assessment is given as guidance. It is advised that the school refers to the CLEAPSS Model Risk Assessment Documents for D&T.

|  |  |  |  |
| --- | --- | --- | --- |
| **Risk Assessment and Operating Procedure – IET Faraday** | | | |
|  | | | |
| **Activity: Faraday Challenge Day – Teacher Led 2020-21** | | | |
| **Persons at risk** | Students taking part in the Faraday Challenge Day and adults in the location | | |
| **Maximum Group Size** | 36 students | Recommended Staffing/Student Ratio | 1:18 |
|  | | | |
| **Risk Assessment** | | | |
| **Hazards** | | **Control Measures** | |
| 1. **Use of electrical equipment – risk of electric shock** | | All electrical equipment is low voltage. | |
| 1. **Use of electrical equipment – short circuit causing heating** | | Warn students of the possibility of burns when connecting and disconnecting components. All pupils will receive a briefing about correct use of electrical components. | |
| 1. **Basic use of hand tools (craft knives, scissors, hole punches, staplers) – risk of cutting or abrasion** | | Warn students of the risks and advise them of safe working practices. Identify member of staff to supervise area. Inform challenge leader if use of knives in school is restricted. | |
| 1. **Use of water with moisture sensors** | | Ensure students test their moisture sensor using a sponge in a small tub rather than directly in any drink or cup of water to avoid spillage on electrical components. | |
| **Location issues** (to be completed by Host School) | |  | |
| Further Action Required: 1. Ensure all persons staffing the Faraday Challenge Days are aware of and competent to comply with this risk assessment and the control measures. | | | |

# **Risk Assessment (page 2)**

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| --- | --- |
| **Working Practice** | |
| **Group structure** | One Faraday Challenge Day Leader and one teacher and one technician from the host school to be present during the whole day to oversee use of equipment and to keep order. Teachers bringing groups from other schools must remain in the room and be responsible for their own students. |
| **Restrictions** | Unknown premises. |
| **Emergency**  **Procedure** | Follow the lead from the Host School.  Faraday Challenge Day Leader to be fully briefed on risk assessment procedure prior to the day or on arrival. |
| **Safeguarding** | The Challenge Leader will carry their DBS and provide it where requested. They will comply with the safeguarding regulations within the school. A member of staff from the school **MUST** be present in the rooms at all times when students are present. |
| **Safety Equipment** | First aid kit and fire extinguisher (electrical fires) to be provided by Host School. |
| **Covid 19** | Please refer to the separate paper ‘Safety during the COVID-19 pandemic’ and inform us of any actions or expectations as appropriate. |
| **Name and role of IET Faraday Challenge representative** | Keira Sewell  Challenge Day Leader. |
| **Name and role of school representative** |  |
| **Signature of the school representative** |  |
| **Date of this Review** | October 2020 |