

# IET Education

**2019 – 2020  
programme**

Science, technology,  
engineering and  
maths for a new  
generation

[theiet.org/education](https://theiet.org/education)

 @IETeducation  IETeducation

# Ready to inspire the next generation of engineers?

Discover which IET Education programme is right for you...

	Primary	Secondary	16+
RESOURCES	FIRST® LEGO® League Jr. Discovery		
	FIRST® LEGO® League Jr.		
		FIRST® LEGO® League	
	IET Education: primary	IET Education: secondary	Post-16 careers information
	DIY Faraday Challenge Days	Faraday Challenge Days	Choosing the right university course
		DIY Faraday Challenge Days	
		Careers information for secondary	Choosing the right apprenticeship
	School Liaison Officers / STEM Ambassadors		
			Academic Partners
		EDT	
		Scouts	IET Diamond Jubilee Scholarships
	The Big Bang Fair		IET Engineering Horizons Bursaries
	Engineering in Motion		IET Power Academy Scholarships
	Fun Kids Radio		Financial help for students / Arkwright
	Kids Invent Stuff		IET On Campus
		Greenpower	
		EDT Industrial Cadets	
	CREST		
	Teaching support and training providers		
	Funding for engineering projects and activities in schools/School Grants Scheme		

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### Gatsby Benchmark ✓

1 2 3 4 5 6 7 8

A number of our IET Education programmes meet the Gatsby Benchmark, as identified in the government's careers strategy to define world-class career guidance within schools.

For each IET Education programme in this booklet, you will see a badge with the number of benchmarks a particular initiative achieves. See page 47 for more information.

## Inspire the next generation to engineer a better world

Providing young people with an engaging science, technology, engineering and maths (STEM) education could set them off on exciting and rewarding career paths.

### Support for your STEM lessons and extra curricular activities.

The IET, along with its partner organisations, provides support to both teachers and students, helping to develop skills which are valuable not just in the engineering sector, but across the global economy.

We offer a wide range of FREE curriculum-linked resources for schools/teachers, community group leaders and parents who are teaching STEM to young people from the age of four through to 19.



### Resources include:

- careers information
- grant funding
- scholarships and training to support the delivery of STEM activities
- initiatives within and outside of the classroom
- curriculum-linked activities



## Engineering today

Engineering is vital to the UK economy and society, providing both employment and solutions to major global challenges.

**As technology becomes more advanced and present in our everyday lives, the sector needs more skilled young people to join it.**

STEM skills, including computing and design and technology (D&T), are hugely important for hundreds of different careers, if not every career in some way.

By encouraging more young people - particularly girls - to engage with STEM subjects, they'll be better equipped for their futures and may even consider STEM as a career option.

Workers within the engineering sector – including in engineering and non-engineering occupations – accounted for

**19%**  
of all UK employees in 2018



The proportion of school-age children who have taken part in a STEM careers activity is rising.

Among young people aged 14 to 16 who completed the 2019 Engineering Brand Monitor,

**32.2%**

had participated in a STEM careers activity in the 12 months prior to completing the survey.



Full-time UK domiciled graduates with an undergraduate degree in engineering and technology achieved a higher starting salary than graduates in most other subjects.



Our analysis projects an annual demand for

**124,000**

engineers and technicians



with core engineering skills across the economy, alongside an additional requirement for 79,000 "related" roles requiring a mixed application of engineering knowledge and skill alongside other skill sets.

## IET Education: Primary

Engage students with our primary teaching resources.



**Our education programme introduces young people to the sheer excitement of science, technology, engineering and maths.**

Our primary resources are free and all available through our website.

### Teaching resources

Our teaching resources will enhance your teaching and bring students' learning to life. The resources are designed to support the delivery of key topics within design and technology, maths and science. They provide practical activity ideas that could be used as one-off activities or linked with other areas of the curriculum and are all fully editable so you can tailor them to your students' and schools' needs.

Join in and work through the activities on offer to spark your pupils' curiosity.



### DIY Faraday Challenge Days

Free guidelines and electronic resources that will take you through a classroom-based engineering challenge day, with an introductory presentation, handouts, video clips, printable Faraday currency and student certificates.

### STEM posters

Visual aids to bring engineering to life in your classroom, with posters covering a range of topics.

With hard copies and PDF downloads available, there's something for everyone!

Find all our primary resources online at [theiet.org/primary](http://theiet.org/primary)

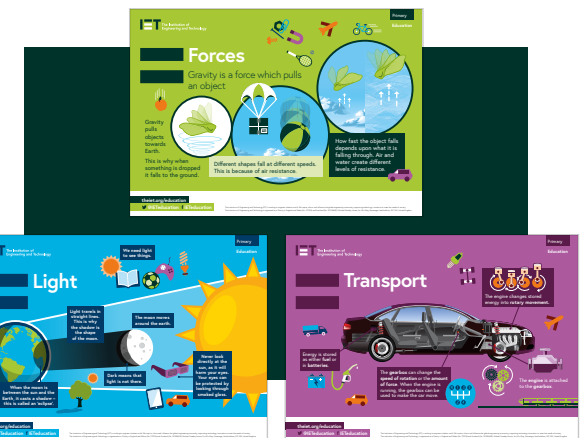
Follow us online:

IETeducation   

### Certificates

Recognise your students' achievements with our STEM certificates!

You can download the set of certificates from our website [theiet.org/primary](http://theiet.org/primary)





**Primary:**  
**FIRST® LEGO®**  
**League Jr.**

Build, code,  
research and  
share. A fun STEM  
programme for  
6-9 year olds.



"We have found *FIRST®* LEGO® League Jr. to be a wonderful experience. The children have enjoyed the preparation, subject matter, building and design so much - it has been so good for them on so many levels. The Expo was such a super day out for the children (and adults!) it really tops the whole project off!"

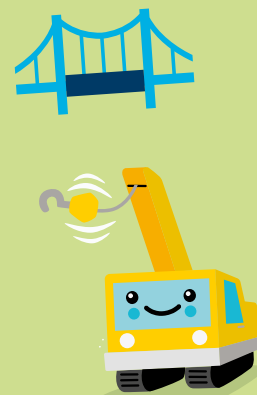
*FIRST®* LEGO® League Jr.  
Coach

***FIRST®* LEGO® League Jr. is delivered by the IET  
as the operational partner in the UK and Ireland.**

Children work in teams to research a specified theme relevant to the world around them, displaying their ideas on a Show Me poster. They also build a LEGO® model and program the model to move using LEGO® Education WeDo 2.0. Teams then attend an IET Regional Expo or an in-school MICRO event.



*FIRST®* LEGO® League Jr. rapidly develops teamwork, design, programming and communication skills, but most importantly it is great fun. It makes the children feel proud of what they have achieved - encouraging them to continue engaging with STEM.



"As a *FIRST®* LEGO® League tournament host, I have found the introduction of *FIRST®* LEGO® League Jr. into our schools extremely beneficial in terms of embedding the necessary skills earlier in the key stages. Not only does it promote the skills needed to build and program, it encourages the essential skills of independent learning, critical thinking and team work. *FIRST®* LEGO® League Jr. provides a safe environment to explore these skills without fear of failure or the pressure of attaining a grade/result."

**Fran Ward**  
*FIRST®* LEGO® League Jr. Host



**Working in teams of up to six, *FIRST®* LEGO®  
League Jr. can be delivered in two ways:**

1. As either curricular or extra-curricular, teams work towards attending a Regional Expo event along with other teams to share their accomplishments.
2. Within the curriculum, MICRO engages a whole class working in five teams, with an in-school Expo to celebrate their achievements.

More details can be found on the  
*FIRST®* LEGO® League Jr. website:

**[firstlegoleaguejr.co.uk](http://firstlegoleaguejr.co.uk)**



Primary:  
**FIRST® LEGO®**  
League Jr.  
Discovery

Wonder, question  
and discover.



**The IET is the operational partner for FIRST® LEGO® League Jr. Discovery in the UK and Ireland - an exciting STEM programme for 4-6 year olds.**

FIRST® LEGO® League Jr. Discovery is a playful introductory STEM programme which happens in the classroom. Children work in teams of four to explore a real-world theme using an exclusive LEGO® Education Discovery model. Using this as inspiration, they then design their own models using LEGO® DUPLO elements to solve meaningful problems.

Children also have a set of Six Bricks that are used for playful starter activities to practice memory, movement, creativity and more! The programme finishes with a celebration event to recognise the children's achievements.



"I loved the Six Bricks challenges – I thought it gave a great understanding and insight into the children's ability to listen to and follow instructions, solve some problems, communicate with one another etc. I also enjoyed the flexibility and freedom the children had to express and share their ideas and opinions."

Primary class teacher

"It has been a brilliant experience to be able to implement STEM activities in such a fun and fascinating way. It has made me more confident as a class teacher."

P1 class teacher



As they work, the children develop valuable habits of learning, such as persisting with tasks and applying previous knowledge to new situations.

Throughout their experience, teams operate under the FIRST® LEGO® League Core Values; celebrating discovery and teamwork, all while having fun!

More details can be found on the FIRST® LEGO® League Jr. Discovery website.

[theiet.org/discovery](http://theiet.org/discovery)





Take the hassle out of your lesson planning  
with our free curriculum-linked resources and  
activities.

We can do more to nurture students' interest and achievement in STEM by showing them the exciting, real-life applications of the subjects. If we want students to be fully equipped for their futures, we need to give them grounding in these subjects and make them aware of the career choices in these fields.

Our resources introduce students to real-life, innovative examples of engineering and technology from around the world.

## Teaching resources

We provide the following resources, free-of-charge:

- classroom activities to drop into lessons
- handouts
- classroom presentations
- videos

Each set of resources is brought to life in a modern engineering context by including:

- short films
- case studies and engineer profiles which can be used to inspire project work and help with careers guidance

Find all our secondary resources online at  
[theiet.org/secondary](http://theiet.org/secondary)

Follow us online:

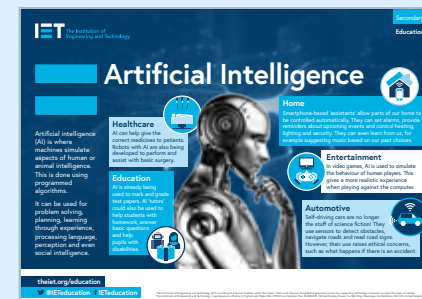
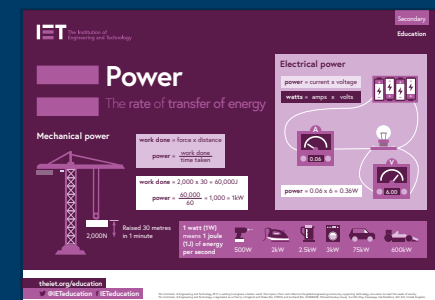
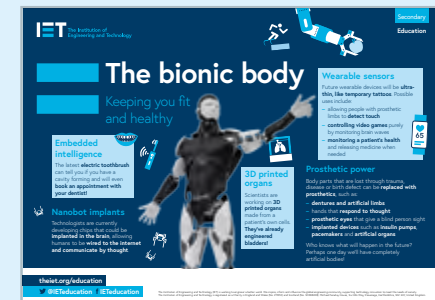
IETeducation   

# STEM posters

Use visual aids to  
make STEM topics  
more memorable.

Our poster pack includes reference posters on electricity and electronics, topical posters with examples of some of the most innovative engineering around today, and case study posters to highlight the real-life applications of these areas.

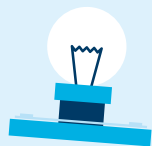
The exact content of these packs will alter over time as new posters become available.



## IET Faraday Challenge Days

Gatsby Benchmark ✓

1 2 3 4 5 6 7 8



**Encourage your students to develop skills for their futures - enter your school into one of our exciting Faraday Challenge Days.**

The annual IET Faraday Challenge is an engineering-based competition for schools. Six teams of six students, aged 12-13 years, compete against one another to see who can design, create and promote the best solution to a given challenge. All challenges are genuine, real-life engineering problems.

They draw upon and reinforce learning from science, maths and design and technology lessons. Students need to demonstrate:

- creativity and innovation
- the ability to work as a team
- the capability to project manage and take on team roles
- presentation skills... and more!

Recent challenges have included developing applications for the micro:bit, sports engineering linked with the Land Rover Ben Ainslie Racing America's Cup challenge, Thorpe Park, and assisting the engineering mission of the James Webb Space Telescope.

The winners from each event receive prizes for themselves and their schools. The top teams across the UK win an all-expenses-paid trip to the National Final to compete for a cash prize for their school.

Visit our website for more information and apply to host a FCD.

[theiet.org/faraday](http://theiet.org/faraday)



## DIY Faraday Challenge Days



**Run your very own Challenge in your own time and on a theme that suits your students.**

These packages available for schools, offer guidelines and electronic resources that take you through the day, with an introductory presentation, handouts, video clips, printable Faraday currency and student certificates.

This resource is free to download and most of the practical materials you'll need are found in typical science or design and technology departments.

Why not invite STEM Ambassadors to give you a hand on the day and bring real-life engineering experience into the classroom?



"An excellent activity that provided a high level of stretch and challenge. It challenged students' own perceptions of their skills and strengths. It was possible to see all students learn and grow throughout the day."

Teacher,  
Kettering Science Academy

"To actually bring multiple subjects together, multiple disciplines and to get a team to focus in that way is quite unique in a school. We can be a little one dimensional at times just focusing on individual departments so I see this as the future!"

Headmaster, Castle Court School



## Secondary: FIRST® LEGO® League

A global robotics-based life skills competition, run by the IET as the operational partner in the UK and Ireland.



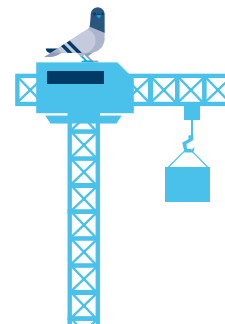
"There are no words that can express my appreciation for what this programme has done for the children involved. It is for me without doubt of huge value to UK and Irish education. I often tell the students that there are days that stay with you as long as you live. IET FIRST® LEGO® League keeps supplying our team with those, so thank you for that."

Neil Corrigan, Team Coach

**Competing teams engage with a real-world issue, develop skills which are crucial for the workplace, and work with STEM professionals in a way that is both inspiring and fun.**

What is unique about FIRST® LEGO® League is that teams must demonstrate Core Values in everything they do. These are about inclusion, teamwork and FUN!

Teams compete in regional tournaments showcasing their robots and projects as they work together to try and qualify for the National Finals. Many teams each year represent their country at international championships in the USA and beyond!



**FIRST® LEGO® League develops skills in:**

- applied science
- design and technology
- programming and control
- computing
- mathematics
- research
- communication and presentation skills
- strategic thinking
- teamwork
- self-confidence

ROBOT GAME

PROJECT

**CORE VALUES**



Teams consist up of up to 10 young people (aged 9-16 years) and an adult coach. Once registered they receive the challenge information and a bespoke set of LEGO® missions to build.

They design, construct and program a robot using a LEGO® MINDSTORMS® kit and create an innovative solution to a real-world problem which they present to the judges at the tournament.

The team work together on the different challenges, seeking advice from experts in their community and preparing to give their best performance at the regional tournament.

**There are three parts to the challenge:**

- 1. Robot:** teams build and program an autonomous robot to undertake a series of tasks around a themed playing field. They are also judged on their robot design and programming.
- 2. Innovation Project:** teams research, create and present a solution to a real-world problem linked to the annual theme.
- 3. Core Values:** teams are judged on how they demonstrate the FIRST® LEGO® League Core Values which include teamwork, impact and innovation.

More details can be found on the FIRST® LEGO® League website.

[firstlegoleague.co.uk](http://firstlegoleague.co.uk)



Gatsby Benchmark ✓

1 2 3 4 5 6 7 8

## Careers information and scholarships



For students who want to pursue careers in engineering and technology, we offer a number of scholarships and bursaries to support them with their education and training.

For those who are still deciding what they want to do, we provide careers guidance materials. These illustrate the huge range of possibilities open to young people in the sector and the entry routes available.



## Post-16 careers information

If you're looking to advise sixth form or further education students - we've put together a collection of careers materials especially for them!

The materials include:

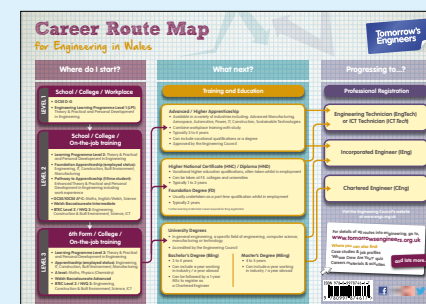
- route maps from Tomorrow's Engineers
- booklets about vocational and university engineering courses
- a booklet about 12 key areas of engineering
- IET scholarship and bursary flyers



## Careers information for secondary students

Tomorrow's Engineers, in collaboration with the IET and other engineering institutions, produces a helpful range of careers information and resources for teachers and young people interested in engineering.

These include a route map (available in formats appropriate for each of the UK nations) illustrating the various academic and vocational routes into an engineering career.



[tomorrowsengineers.org.uk](http://tomorrowsengineers.org.uk)

Gatsby Benchmark ✓

1 2 3 4 5 6 7 8

[theiet.org/engineering-careers](http://theiet.org/engineering-careers)





## Choosing the right university course

Help your students work out which engineering course is right for them.



The routes to engineering section of our website gives up-to-date advice on choosing a course and explains how we support students at university and in their early career.

### Accredited courses

We run an accreditation programme, which monitors and certifies courses, checking and approving:

- facilities and staffing
- relevance to employers
- students' opinions about the course

Our list of currently accredited degrees includes mainly BEng (Hons), MEng and MSc qualifications covering electrical and electronic engineering, computing, mechanical and manufacturing engineering and more. Individual programmes include a wide range of specialisations, including nanotechnology, communications and renewable energy.

Go online today and find out how to point your students in the right direction.

[theiet.org/career/routes-to-engineering](http://theiet.org/career/routes-to-engineering)

Students about to start an IET accredited course are eligible to apply for an IET Diamond Jubilee Scholarship (see page 23).



## Choosing the right apprenticeship

Help your students work out which apprenticeship is right for them.



The apprentice section of our website is packed with advice on choosing the right apprenticeship, including details of IET schemes.

### IET approved apprenticeship schemes

To gain IET approval, an apprenticeship provider needs to have demonstrated that their education and training meets certain quality standards and that they are committed to helping apprentices progress and develop. They must also provide apprentices with the skills they need as a basis for professional registration.

Explore what's available and help your students make the right choices.

Students and apprentices on an IET approved apprenticeship scheme or degree apprenticeship are eligible to apply for an IET Engineering Horizons Bursary (see page 24).



[theiet.org/career/routes-to-engineering](http://theiet.org/career/routes-to-engineering)



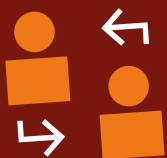
## Academic Partners

IET Academic Partners are university departments that understand the value of association with the IET and want to enhance the student experience.

Studying at an IET Academic Partner university means students' IET membership fees will be partially or fully funded, and they benefit from an IET accredited course – an internationally respected benchmark awarded to high quality programmes.

Academic Partners work closely with us to make sure students get opportunities to join our On Campus groups, hear from industry speakers, and use our study and professional development resources.

Find out more  
[partnerships@theiet.org](mailto:partnerships@theiet.org)



## Arkwright Engineering Scholarships



**The Arkwright Engineering Scholarships programme is run by The Smallpeice Trust. It is the most prestigious scholarship scheme of its type in the UK.**

Funded by industry, academia, professional institutions (including the IET) and private donations, 400 Arkwright Engineering Scholarships are awarded each year. Each scholarship provides £300 for the student and £200 for the school per year for the two years of their course.

### Who can apply?

Students who are going to be studying for an AS/A2, IB or Higher/Advanced Higher level in STEM subjects at a school which is affiliated with Arkwright may apply for a scholarship.

[arkwright.org.uk](http://arkwright.org.uk)

## IET Diamond Jubilee Scholarships



**Students can apply for an IET scholarship of at least £1,000 per year for the duration of their degree course; up to three years for Bachelor's and four years for MEng.**

### Candidates must be:

- a UK resident
- entering an IET accredited Bachelor's or MEng degree in Autumn
- not in receipt of another IET scholarship or grant, or other company-sponsored scholarship
- expecting to achieve high grades at A level, Higher's or Advanced Highers

Successful candidates will act as role models for the IET and the engineering profession, and will be keen to help promote engineering to others.

### Deadline

September

### How to apply

See website for further information and apply online.  
[theiet.org/diamond](http://theiet.org/diamond)





## IET Engineering Horizons Bursary



**A number of bursaries worth up to £4,000 are available to individuals following a vocational route into engineering as an apprentice or undergraduate student.**

The bursary is also aimed at apprentices and students who may face, or have faced, challenges or personal obstacles.

### Candidates must be:

- a UK resident
- an apprentice in any year of an IET Approved Apprenticeship scheme, or
- a student in any year of an IET Accredited Bachelor's or MEng degree, or on an IET Accredited degree apprenticeship
- a part-time or full-time student
- not in receipt of any other IET scholarship or grant
- a student in any year of an IET accredited MEng or BEng engineering or technology degree course

Successful candidates will act as role models for the IET and the engineering profession, and will be keen to help promote engineering to others.

### Deadline

September

### How to apply

See website for further information and apply online at [theiet.org/horizons](https://theiet.org/horizons)

## IET Power Academy Scholarships



**The Power Academy offer scholarships and paid summer work placements with their partner companies to students at selected universities.**

We award a number of scholarships each year to students at participating universities. Students get mentoring from industry partners, paid summer placements, an annual bursary and the opportunity of a career with the sponsoring company after graduation.

[theiet.org/poweracademy](https://theiet.org/poweracademy)



## IET On Campus



**This initiative allows students to set up their own engineering societies with support from the IET. They gain fantastic opportunities that they might not otherwise have had access to.**

Groups promote engineering and the IET, as well as develop soft skills that students do not typically gain through their studies.

### Benefits for students

- develop skills necessary for the workplace
- network with professional engineers
- explore career opportunities
- get funding for events and activities
- discover volunteering opportunities

[theiet.org/ocampus](https://theiet.org/ocampus)  
[ocampus@theiet.org](mailto:ocampus@theiet.org)

## The IET and disadvantaged pupils



"On the tube back home, they were all discussing what they would do differently and how they would continue next year if they were to do it again. As a result, *FIRST*® *LEGO*® League is continuing as an after-school club and we are hoping to develop our current work to share with the whole school and parents during Science Week."

"Taking part in the competition gave the children a chance to mix with peers they wouldn't normally spend time with and promoted team work and problem solving within a unique setting - at school and as part of the competition day."

At the IET we believe that every child, regardless of their background, deserves the opportunity to participate in our programmes. We are committed to reducing inequality and closing the attainment gap between disadvantaged pupils and their peers across the country by breaking down the barriers to social mobility and socio-economic backgrounds. We want to see more disadvantaged young people participating in our programmes, attending our finals, being inspired and progressing through to the most rewarding careers in STEM.

### To be eligible you need to

1. have more than 25% Free School Meals in your school
2. be one of the 12 Opportunity Areas highlighted by the government

We are proud to be working with sponsors who enable teams from disadvantaged backgrounds to participate in the IET Faraday Challenge Day and IET *FIRST*® *LEGO*® League, IET *FIRST*® *LEGO*® League Jr. and IET *FIRST*® *LEGO*® League Jr. Discovery programmes.

- |                         |                                   |
|-------------------------|-----------------------------------|
| - West Somerset         | - Bradford                        |
| - Norwich               | - Doncaster                       |
| - Blackpool             | - Fenland and East Cambridgeshire |
| - North Yorkshire coast | - Hastings                        |
| - Derby                 | - Ipswich                         |
| - Oldham                | - Stoke-on-Trent                  |

**If you think that your school or group might be eligible, please email us to find out more.**

[ieteducation@theiet.org](mailto:ieteducation@theiet.org)



"We had a fantastic first year and are excited for year 2 now we know what to do! We won a trophy for best project which was totally unexpected. We've also organised a *LEGO*® Friendly between local schools that entered the main competition so that we can keep our skill set ticking over for year."



Our IET Faraday programme is completely free to all schools. We receive funding specifically for schools with disadvantaged students. Your school will be prioritised if you apply. During the 2018-19 IET Faraday Challenge Day season we reached 66 schools who met this criteria.

Please apply using the usual process and we will determine if you fall within our criteria and prioritise you.

[theiet.org/faraday](http://theiet.org/faraday)



We're sure you are aware that this funding is solely to widen the opportunity to children experiencing hardship and to broaden opportunities. We trust that you as teachers will use this opportunity to reach the children on Pupil Premium, children experiencing hardship, or who may face, or have faced challenges or obstacles in their lives.





## School Liaison Officers

Gatsby Benchmark ✓

1 2 3 4 5 6 7 8

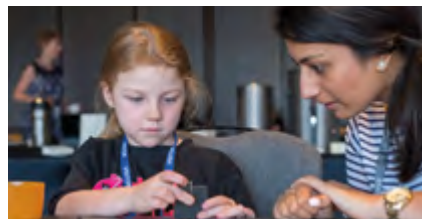


**Schools Liaison Officers are IET members who volunteer to help to introduce young people to the exciting world of STEM and raise awareness about engineering careers.**

Schools Liaison Officers are registered STEM Ambassadors, and can support a variety of opportunities for young people to learn about engineering. They:

- represent the IET at careers and science fairs
- give careers talks
- act as advocates for applications to the Engineering Education Grant Scheme
- support competitions, after-school clubs and other school events

There is generally one Schools Liaison Officer in each UK county. For an introduction to your local volunteer contact us at [ieteducation@theiet.org](mailto:ieteducation@theiet.org)



## STEM Ambassadors

Bringing engineers into the classroom.



**IET members registered as STEM Ambassadors are available to support school activities and bring real-life engineering experience into the classroom.**

STEM Ambassadors can support activity days, after-school clubs, careers events and even lessons.

The national STEM Ambassador programme enables teachers to bring trained and checked professionals into the classroom to support teaching and inspire students.

To find out more and request a STEM Ambassador visit [stem.org.uk](http://stem.org.uk)



## Teaching support and other STEM providers



Working alongside others to engage young people with engineering and technology.

### Tomorrow's Engineers

Tomorrow's Engineers is a collaborative project from the engineering community to promote engineering careers to young people, their teachers and their parents. It includes high quality careers resources, STEM enrichment activities and building links between employers and schools.

[tomorrowsengineers.org.uk](http://tomorrowsengineers.org.uk)

### Association of Science Education (ASE)

The professional association for science teachers. The ASE provides a range of resources, training and networking opportunities, including their annual and regional conferences.

[ase.org.uk](http://ase.org.uk)

### The Design and Technology Association

The professional association for design and technology teachers. The association provides a range of resources, training and networking opportunities.

[data.org.uk](http://data.org.uk)

### Institute of Physics (IOP)

Promoting physics and bringing physicists together for the benefit of all. The IOP provides a range of resources, funding, training and networking opportunities for physics teachers.

[www.physics.org](http://www.physics.org)  
[iop.org](http://iop.org)



### Project ENTHUSE

Project ENTHUSE is a funding partnership that allows the provision of subject-specific Continuing Professional Development (CPD) for teachers, technicians and other support staff at the National STEM Learning Centre in York and through partners in Northern Ireland (Department of Education Northern Ireland), Scotland (SSERC) and Wales (Techniquet).

[stem.org.uk/bursaries](http://stem.org.uk/bursaries)

### Institution of Mechanical Engineers (IMechE)

The IMechE is a professional engineering institution, improving the world through engineering. In addition to the collaborative work with the IET, Tomorrow's Engineers and Teachers in Residence programme, the IMechE support Bloodhound SSC and Primary Engineer.

[imeche.org](http://imeche.org)

### ESP

ESP is a collaboration of Scotland's colleges and industry partners established to increase Scotland's capability and capacity to deliver the right skills for the energy, engineering and construction sectors to meet industry demand. ESP works to promote STEM initiatives in colleges around Scotland.

[esp-scotland.ac.uk](http://esp-scotland.ac.uk)



### EESW

EESW is an independent registered charity running schemes to inspire and motivate young people in Wales aged 8 - 19 to choose careers in science, technology, engineering and mathematics (STEM).

[stemcymru.org.uk](http://stemcymru.org.uk)

### Teach First

Teach First aims to end educational inequality. It finds, trains and supports new teachers to work in low income communities, developing these new teachers to become leaders in schools and to inspire children towards the future they want.

[teachfirst.org.uk](http://teachfirst.org.uk)

### Teachers in Residence

Teachers in Residence is a new joint initiative between industry, the IET, the IMechE and the Design and Technology Association. It gives D&T, science and maths teachers the opportunity to take part in 3-5 day internships to gain first-hand experience of modern industry and to develop meaningful industry engagement links to benefit themselves and their students.

Placements are in UK-based design, manufacturing, engineering and construction companies.

Visit [data.org.uk](http://data.org.uk)



## The Big Bang Fair



**The Big Bang is the largest celebration of science, technology, engineering and maths for young people in the UK.**

The Big Bang UK Young Scientists and Engineers Fair is an award-winning combination of exciting theatre shows, interactive workshops and exhibits, together with careers information for school groups and families, provided by a wide range of people who are working in the field.

As well as the annual national fair, hosted at the NEC in Birmingham from 11-14th March 2020, the Big Bang Near Me programme enables young people to experience a Big Bang Fair nearer to where they live, either at a regional fair or smaller school event.

For more information, visit [thebigbangfair.co.uk](http://thebigbangfair.co.uk)



## EDT

**The EDT is the largest provider of STE(A)M (Science, Technology, Engineering, Arts and Maths) experiences, delivering over 40,000 each year for young people aged 9-21 across the UK.**

Their range of work-related learning schemes provides opportunities for young people to enhance their technical, personal and employability skills through industry-led projects, industrial placements and specialised taster courses.

For more information, visit [etrust.org.uk](http://etrust.org.uk)



## Scouts

**The Scouts help 460,000 young people of every background do more, learn more and be more.**

They bring young people together to enjoy incredible fun and adventures while learning the skills to succeed in life. The IET works in partnership with Scouts to inspire more young people into a STEM career.

Sponsoring the Scouts Electronics Badge, we have created a wonderful resource pack to help leaders deliver the electronics badge, a badge which can be difficult to achieve.

Through our partnership, thousands of young people are taking steps to becoming STEM ambassadors of the future.

For more information, visit [scouts.org.uk](http://scouts.org.uk)





Engineering in Motion offer STEM based enhancement and enrichment activities, including the F1 in Schools STEM Challenge, the Jaguar Primary School Challenge and the Land Rover 4x4 in Schools Technology Challenge.

These different programmes can be run outside core school hours or included in lesson-time as an assessed project.



For more information, visit  
[engineeringinmotion.com](http://engineeringinmotion.com)

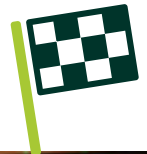


The F1 in Schools Technology Challenge tasks students with using CAD/CAM software to design, analyse, manufacture, test, and race a miniature compressed air-powered F1® car.

The cars are small, made from a F1 in Schools Model Block and raced on a track just 25 metres long. However, designing, building and testing the vehicles and arranging sponsorship and marketing require the same skills demanded in the motor racing industry. Competitors compete against other teams in regional, national and world finals.



F1 in Schools started in the UK in 2000 and now runs in over 50 countries worldwide, engaging thousands of students. With tremendous support from industry and the endorsement of Formula 1®, F1 in Schools is a truly inspiring opportunity for young people.



For further information on how to register a team and to download the rules and regulations please visit  
[f1inschools.co.uk](http://f1inschools.co.uk)





## Land Rover 4x4 in Schools Technology Challenge

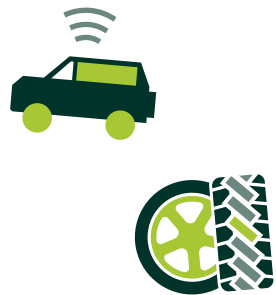


Supported by Land Rover, 4x4 in Schools is a national competition that gives young people an insight into what it takes to become an engineer.

The challenge involves between three and six team members working together to design and build a radio controlled four-wheel drive (4x4) vehicle, to set specifications. The vehicle must be able to successfully negotiate a specially designed test track emulating real life and it must perform as a full scale 4x4 vehicle would do in an off-road situation.

Competing teams have their vehicles rigorously tested in regional, national and world finals.

For more information on registering a team and to download the rules and regulations please visit [www.4x4inschools.co.uk](http://www.4x4inschools.co.uk)



## Jaguar Primary School Challenge

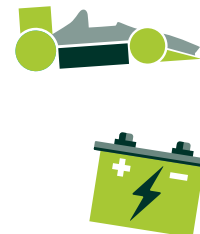


The Jaguar Primary School Challenge is a STEM competition, open to students aged 6-11 years old and involves designing and manufacturing the fastest car possible within a set of rules, following the design and engineering processes employed by real engineering companies like Jaguar Land Rover.

Students will research, design and create model racing cars, learning about aerodynamic forces, efficiency, mathematics and the principles of design; as well as forming their own racing car team, complete with logos, sponsors and marketing. Teams are also given the chance to experiment with the electrification of their vehicles and the design considerations of using alternative energy sources.

Teams then compete at regional and national finals to be crowned National Champions, producing design portfolios, presenting to the judges and culminating in the ultimate test of speed with a pulsating head-to-head race.

For more information on the challenge and to download the rules and regulations please visit [primaryschoolchallenge.com](http://primaryschoolchallenge.com)



## Fun Kids Radio



**Fun Kids is a national DAB digital radio station providing entertaining and informative programmes for children.**

The IET and Fun Kids have developed several series of short audio programmes and videos for 8-12 year olds called 'Techno Mum' which aims to explain the technology that young people see around them.

Starring Tim and his engineer mother, Techno Mum, each episode looks at different ideas and the engineering behind it - from electric cars and motion sensor games, to supermarket scanners and much more.

The audio podcasts and videos can be downloaded at [funkidslive.com/techno-mum](http://funkidslive.com/techno-mum)



## Kids Invent Stuff



**Kids Invent Stuff is the YouTube channel where 5-11 year olds have the chance to get their invention ideas built by real engineers. This gives more primary school kids the chance to engage with real engineering projects.**

Kids are encouraged to submit their ideas for inventions to solve a different challenge each month. Ideas can be submitted as drawings or videos uploaded below.

The most creative inventions are showcased on their YouTube channel and each month one idea is built and tested on camera, with hilarious consequences.

Find out more at [kidsinventstuff.com](http://kidsinventstuff.com)







The highly successful Greenpower challenge to design, build and race a single seat electric car provides young people with a unique hands-on opportunity to engage in STEM.

The proven project uses the excitement of motorsport to inspire students from primary school through to university to excel in the STEM subjects along with business studies, computing and physics.

## Primary

### IET Formula Goblins

Teams of students aged 9-11 assemble a Greenpower supplied kit following industry standard engineering diagrams. Bodywork is left for the teams to design and build using clear safety regulations as a guide. The winners will be the team that perform best in technical driver challenges and informal presentations.



## Secondary

### IET Formula 24

IET Formula 24 consists of two subdivisions. Teams of students aged 11-16 race their cars at regional events in two races each lasting 90 minutes. The winners will be the car that achieves the greatest distance proving to be the most efficient vehicle.

**Scratch built:** Students design and build their cars using clear safety regulations as a guide. Only batteries and an electric motor are supplied as standard issue kit.

**Kit car:** Students assemble a Greenpower supplied kit following industry standard engineering diagrams. Bodywork is left for the teams to design and build using clear safety regulations as a guide.

### IET Formula 24+

IET Formula 24+ consists of teams from schools, Further and Higher Education institutions, industry (apprentices), and private entries. Participants are aged between 16-25 and will design and build their cars using clear safety regulations as a guide.

[greenpower.co.uk](http://greenpower.co.uk)





As a thought leader in STE(A)M education, EDT developed Industrial Cadets with support from industry to provide a benchmark accreditation, mapping activities against a skills and competency framework.

**The Industrial Cadets flexible framework allows:**

- Young people to demonstrate experience and progression, empowering them to succeed in future study and make informed career choices.
- Employers and partners to accredit existing activities, develop new ones and run alternative accredited programmes.

Young people are supported and mentored by role models to achieve a nationally recognised accreditation, which results in an award for the young person and recognition for the employer.

For more information, visit  
[etrust.org.uk](http://etrust.org.uk)  
[industrialcadets.org.uk](http://industrialcadets.org.uk)



CREST is a scheme that inspires young people to think and behave like scientists and engineers. CREST projects allow students to be creative with their STEM project-based work and find solutions to questions they care about.

CREST offers educators an easy-to-run framework for curriculum enhancement and is student-led, encouraging young people to take ownership of their own projects. Students who engage in CREST awards are proven to have better GCSE grades, with disadvantaged students seeing the biggest impact.



There are six CREST Award levels for ages 5-19, allowing students to progress through the scheme throughout their education. The awards are well regarded, high quality and a tangible recognition of success. CREST is easy to organise and can be run in schools, clubs, youth groups, other organisations or at home.

Sign up for your free CREST account online  
[crestawards.org](http://crestawards.org)



## Funding for engineering projects and activities in schools



### Engineering Education Grant Scheme

**Funding for extracurricular engineering projects and activities.**

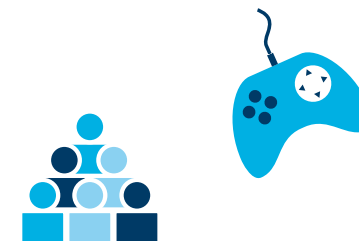
The IET and the Institution of Mechanical Engineers (IMechE) collaborate to provide the Engineering Education Grant Scheme (EEGS).

The scheme supports projects that aim to engage young people in learning about engineering and to develop the professional skills of those involved in supporting STEM learning and careers awareness. The scheme also supports projects that improve wider engineering literacy.

Any youth based organisation, school or individual able to develop and deliver STEM activities in the UK can apply for funding.

There are two funding rounds each year, opening in January and June.

Find further information and apply at [theiet.org/funding](https://theiet.org/funding)



### School Grants Scheme

**The Institute of Physics (IOP), the IET and the Science and Technology Facilities Council (STFC) provide schools with up to £600 for projects, to participate in activities, or to purchase materials not normally covered by school budgets.**

The scheme awards funds for projects linked to teaching or promoting of physics or engineering and is open to all UK educational organisations teaching students aged 5-19. There are three opportunities to apply each year, with deadlines in February, June and November.

Further information, including guidance notes and examples of funded projects, can be found on the IOP website. [iop.org/schoolgrants](https://iop.org/schoolgrants)



## You and the IET

The IET is a world-leading professional organisation, which promotes the exchange of information and ideas for the advancement of science, engineering and technology worldwide.



**We have over 169,000 members in 150 countries, representing a broad cross-section of the UK and global engineering communities.**

We provide our members with a Professional Home for Life® – a range of professional services and products that support members throughout their career.

Members are organised into geographical Local Networks and specialist Technical and Professional Networks; whose committees organise events and deliver activities. The Local Networks have Schools Liaison Officers who are responsible for engagement between the Network, schools and educational support organisations in their area.

Contact details for your local Schools Liaison Officer can be found at [theiet.org/local](https://theiet.org/local)

### Education newsletter

Sign up online to the education eNewsletter and receive updates throughout the year. Register on our website and tick the relevant box.

### Follow us online:

#### IET Education

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[pinterest.co.uk/ieteducation](https://pinterest.co.uk/ieteducation)

#### FIRST® LEGO® League

[facebook.com/FIRSTLEGOLeagueUK](https://facebook.com/FIRSTLEGOLeagueUK)  
[twitter.com/FLLUK](https://twitter.com/FLLUK)

### How can you find out more?

Details of how to access the resources listed in this guide are included in each section.

If you have any queries you can contact our Education Department on **+44 (0)1438 767373** or at [ieteducation@theiet.org](mailto:ieteducation@theiet.org)

For more information about the IET in general, visit [theiet.org](https://theiet.org)

## Key dates 2019-2020

Although there are lots of STEM activities happening throughout the academic year, here are a few dates to note in your calendars...

4 – 8 November 2019	Tomorrow's Engineers Week
December 2019 – February 2020	IET FIRST® LEGO® League Regional Tournaments
8 – 11 January 2020	ASE Annual Conference
22 February 2020	IET FIRST® LEGO® League Wales and England Final
29 February 2020	IET FIRST® LEGO® League Scotland National Final
6 – 15 March 2020	British Science Week
7 March 2020	IET FIRST® LEGO® League Irish National Final
11 – 14 March 2020	Big Bang Fair
23 June 2020	International Women in Engineering Day
5 July 2020	LGBT in STEM Day
8 July 2020	Faraday Challenge Day National Final
Autumn 2019 and Spring 2020	Engineering Education Grant Scheme Applications

For more information on key event dates, and application process deadlines, please visit: [theiet.org/education](https://theiet.org/education)

### Gatsby Benchmark ✓

1 2 3 4 5 6 7 8

A number of our IET Education programmes meet the Gatsby Benchmark, as identified in the government's careers strategy to define world-class career guidance within schools.

**For each IET Education programme in this booklet, you will see a badge with the number of benchmarks a particular initiative achieves.**

### The eight Gatsby Benchmarks are

- 1 A stable careers programme
- 2 Learning from career and labour market information
- 3 Addressing the needs of each pupil
- 4 Linking curriculum learning to careers
- 5 Encounters with employers and employees
- 6 Experiences of workplaces
- 7 Encounters with further and higher education
- 8 Personal guidance





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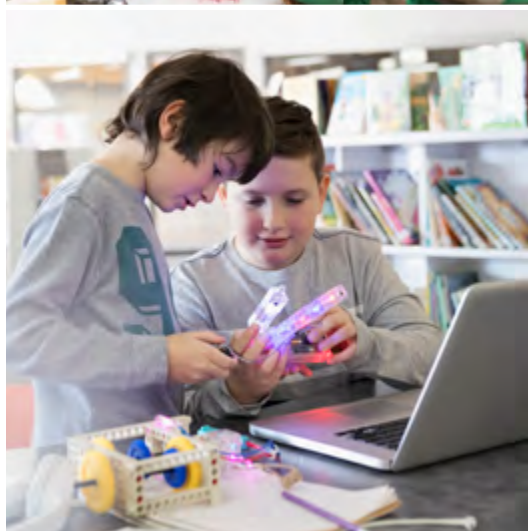
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