The lowdown

This isn’t a one-off challenge. It’s a programme that gets your students (11-14s) working together to solve real-world engineering, technology and computing challenges.

Your student team will learn how to build, program and control autonomous LEGO® robots to complete a series of short, exciting aviation missions using LEGO® MINDSTORMS® Education EV3 sets. From speed racing to humanitarian aid, they’ll demonstrate their skills at challenges held around the country.

The journey starts in your school and could take your team all the way from regional heats to the national final. You’ll have our help along the way, with training and equipment.

You can run activities and lessons with your team during school time or as an extra-curricular activity.

The learning

Your team will research, design, plan, implement and present their own solution to a contemporary engineering problem – developed with support from the Royal Air Force and Rolls-Royce – gaining feedback on their work from the engineering community. The challenge will open up potential new careers to your students and help put their school learning into context.

The skills

Through the challenge you can help your students develop valuable life skills like strategy, teamwork, research and self-confidence, as well as uncovering exciting new career possibilities.
The journey

The Robot Challenge

The Robot Challenge consists of a series of aviation missions. Teams try to complete as many as possible under time pressure using the unique robots that they’ve built.

Robot Design

This can be compared to a real-world engineering design review. After completing the aviation missions, students present the software and physical designs they’ve created for the challenge to judges.

Research Project

Students research, design and present their own solution to a contemporary engineering problem faced by STEM professionals in the aviation industry.

The opportunity

Pupils will gain understanding of a variety of topics including mechanics, forces and motions, angles, trigonometry, data logging and programming commands by visualising their activities.

Pupils can build simple programs in the classroom using the drag and drop icons of the LEGO® MINDSTORMS® Education EV3 software, building up their skills to writing more complex algorithms.

This challenge also acts as a great step in developing problem-solving skills while working in a team. Previous finalists have gone on to be national finalists in the international FIRST® LEGO® League competition.

The kit

All teams receive LEGO® MINDSTORMS® Education EV3 resources, including:

- Hardware that allows pupils to build, program and test their solutions based on real-life robotics technology, controlled via Bluetooth and Wi-Fi.
- Aviation mission user guide.
- Associated Tomorrow’s Engineers EEP Robotics Challenge resources.
The extras

The challenge aims to support the science, technology, engineering and maths (STEM) curriculum, along with computing, and design and technology.

LEGO® MINDSTORMS® Education EV3 is proven to engage and motivate pupils in STEM subjects. EV3 is ideal for introducing pupils to subject areas and then guiding them towards more complex challenges.

The dates

- Applications open: 8 April 2019
- Applications deadlines: 15 July 2019
- Teacher training days (one full day for one or two teachers): September and October 2018
- Regional heats: February and early March 2020
- UK final: Friday 13 March 2020 at The Big Bang UK Young Scientists & Engineers Fair Birmingham NEC

The support

A teacher training day underpinned by a LEGO® Education Academy Certified Trainer, followed by online support and tutorials, with input from STEM Ambassadors and volunteers.

The application

Full application details and T&Cs are on the website, but your application should include a short outline of why you want to take part.

In no more than 500 words, tell us why your school should join the Tomorrow’s Engineers EEP Robotics Challenge. That should cover how the challenge could be run in your school and what impact you expect it to have on your students.

We also want to find out about your school and your work to widen participation in STEM, particularly engineering, through participation in initiatives like the challenge. If you already work with a STEM Ambassador or a local engineer/engineering company, don’t forget to highlight that in the application.

Teams can be created once the application is successful. Only one application per school.
"All of our team are now taking GCSE Computing and looking to have a STEM-based career, possibly in engineering."
Teacher, Colchester

"Many of our pupils are keen on entering careers in engineering and their eyes have been opened to the many varied careers available to them."
Teacher, Edinburgh

**Steps to success**
- Apply to take part in the challenge
- Get the kit
- Do the training
- Set up a team
- Complete the aviation missions
- Design a robot
- Research for presentation
- Go to a challenge event
- Reach the UK final
- Be a winner

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