



Young Engineers and Science Clubs Scotland (YESC)

**Information and Support for Teachers and Club Leaders
2017-18**

Background

SCDI's Young Engineers and Science Clubs (YESC) Scotland programme has played a key role in inspiring young people towards STEM careers since 1987. We now have more than 1,500 primary and secondary schools registered in our network, from Orkney to Dumfries, with an estimated membership of over 32,000 girls and boys. Our network continues to expand rapidly and, thanks to funding support from a wide range of organisations, we are pleased to support schools by providing many free STEM resources and grants.

We hope the information in this pack, and on our website, will help answer any questions you have about starting a club, or expanding an existing club. We look forward to hearing from you and hope to see you at our events!

You can contact the team anytime - yesc@scdi.org.uk or find your Regional Coordinator's details on our [website](#).

What is YESC all about?

The YESC programme is a broad umbrella under which all STEM clubs, of all shapes and sizes, are most welcome! We have a huge array of clubs in the network – from Chemistry to Computing, Engineering to Geology, Physics to Forensics. We encourage schools to use the flexibility of our programme to develop a model that suits the school. This could be:

- Regular weekly meetings over lunch time or after school
- One off project(s) for a transition activity, or for a particular themed day/week/month/year such as British Science Week, or a topical STEM activity such as viewing the solar eclipse
- Whole class project(s) running regularly in a Primary school
- Whole class project(s) as part of an Added Value Unit or Elective in Secondary school

By giving young people the opportunity to join a club they will:

- Be inspired about STEM by sparking their curiosity and firing their imagination
- Challenge perceptions of gender stereotypes within the STEM sector
- Develop valuable skills for learning, life and work
- Gain knowledge to support them across several curriculum areas
- Discover the huge range of career opportunities within STEM
- Have opportunities to represent their school and meet engineers at our Celebration events

Whether you're already running a club or looking to start, registering free of charge with Young Engineers and Science Clubs Scotland gives you a huge range of benefits including:

- Ongoing advice and support from a team of Regional Coordinators across Scotland all of whom have a science or engineering background. Two former teachers are also in the team.
- A range of free resources to download from our website
- Access to resource kits packed with equipment to deliver interdisciplinary, topical STEM projects
- Teacher CPD sessions to accompany the resource kits
- Grants of up to £100 for resources and equipment
- Access to a range of STEM competitions with fantastic prizes
- Signposting to other STEM resources and events through our website, Twitter and regular newsletters
- Invitations to YESC events including our Regional and National Celebrations of Engineering and Science

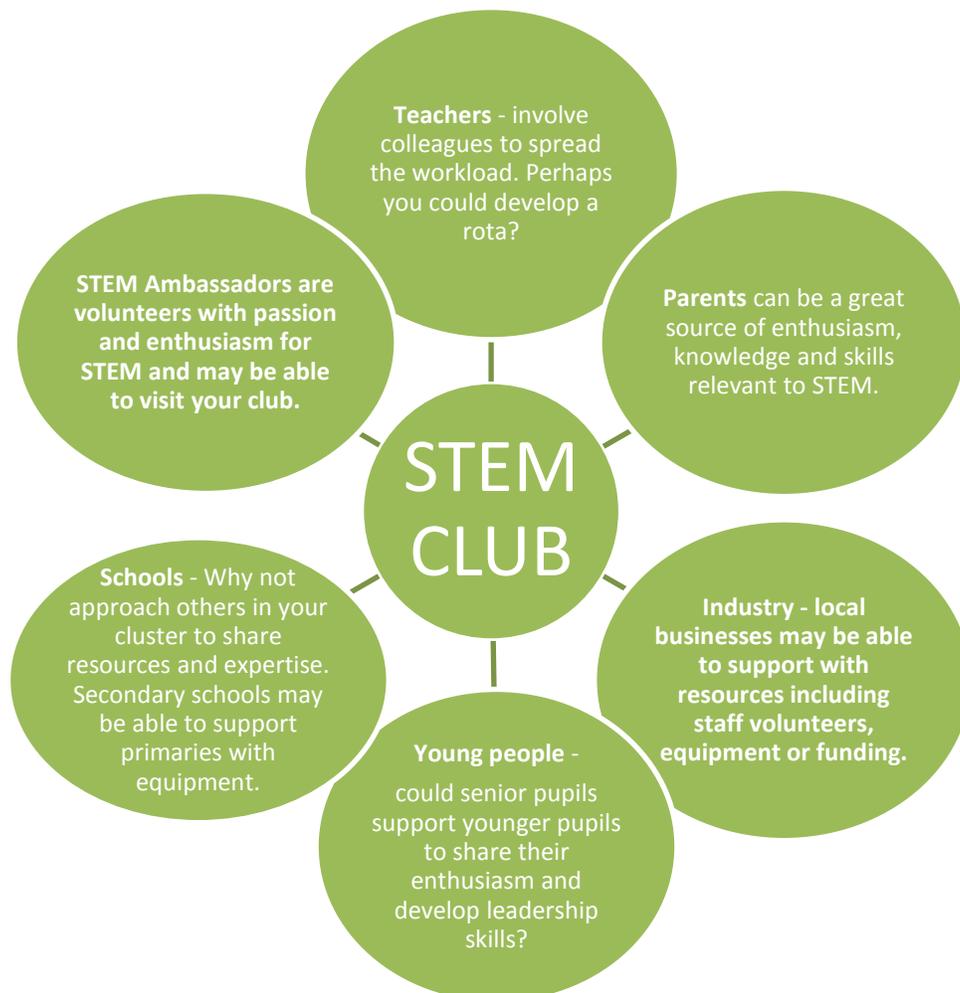
Delivering Club Activities

Many people can support your club as a one-off or ongoing basis. With the recommendations of [Developing Scotland's Young Workforce](#) encouraging partnerships with industry, there's never been a better time to involve local companies in your school and a club could be a great opportunity to get them involved.

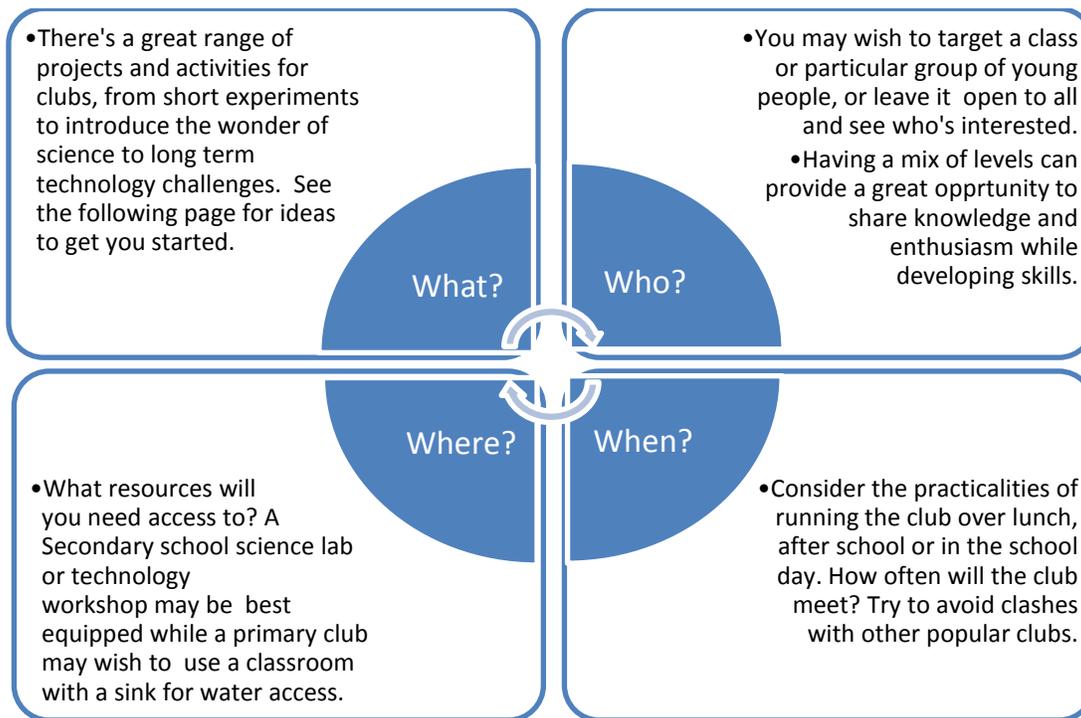
[Education Scotland](#) has produced useful resources to support schools to develop partnerships with employers, and to engage with parents.

You can find details of your local STEM Ambassador Hub below to request the support of a STEM Ambassador:

- [Aberdeen Science Centre](#): Aberdeen City, Aberdeenshire, Eilean Siar, Highland, Moray, Orkney Islands, Shetland Islands. E-mail: stemambassadors@ASC.scot
- [Science Connects](#): Argyll & Bute, Dumfries & Galloway, East Ayrshire, East Dunbartonshire, East Renfrewshire, Glasgow City, Inverclyde, North Ayrshire, North Lanarkshire, Renfrewshire, South Ayrshire, South Lanarkshire, West Dunbartonshire. E-mail: STEM-Ambassadors@glasgow.ac.uk
- [STEM East](#): Angus, Clackmannanshire, Dundee City, East Lothian, Edinburgh, City of, Falkirk, Fife, Midlothian, Perth & Kinross, Scottish Borders, Stirling, West Lothian. E-mail: ambassadors@fife.ac.uk



Steps to Setting up a Club



To register, simply complete the [short registration form](#) on our website. We'll then be in touch with details of available resources, upcoming events and will send a certificate for the school.

YESC Projects and Resources

In addition to the projects listed below, others may become available throughout the year as relevant. For example, clubs were offered a free Solar Filter with instructions to make an Eclipse Viewer kit in March 2015 to view the partial solar eclipse.

Most of the projects are flexible for you to deliver as appropriate within the club, depending on the resource available. Longer term projects such as the Knotts to Watts challenge or Greenpower Challenge will require commitment over several weeks.

Our Young Engineers and Science Clubs Scotland website provides information about all of our current projects, including downloadable resources. You'll also find links to a range of other resources, challenges and competitions from other STEM learning providers www.yescotland.co.uk

Also available on our website is a series of case studies highlighting current clubs in schools across Scotland. We hope these will provide you with information and inspiration to get your club up and running, or to reinvigorate an existing club. If you would like to feature your club as a case study please get in touch.

Project theme and title	Description	CfE level	Link to industry sector
Energy			
Heather's Hut £275 per kit	An exploration of renewable energy including wind, solar and hydro power.	Second	Renewable Energy
Hydrocarbons in Action £260 per kit	Investigating oil and gas exploration and production with a resource kit which includes an ROV model.	Second	Oil and Gas
Ten Green Bottles Free to download	A downloadable resource to investigate the properties of Carbon Dioxide and introduce chemical engineering .	Second	Chemical Engineering
Carbon Capture and Storage Free kit to selected schools	Investigating properties of Carbon Dioxide and challenges of capturing and storing by assuming the roles of Chemist, Geologist, Transport Engineer and Marine biologist before creating a model CCS facility.	Third/fourth	Energy
ICT & digital technologies			
Pi in the Sky £220 per kit	An interdisciplinary project using the innovative technology of Raspberry Pi computers, clubs to create a weather station and programme the Pi to record data, using equipment provided in a resource kit.	Third/fourth, Senior phase	IT, Digital
Tweety Pi £220 per kit	An introduction to programming using Scratch to programme a Raspberry Pi to record visitors to a bird table in the school grounds.	Second	IT, Digital
Lighting up the Curriculum for Excellence £250 per kit	An introduction to electronics by learning to solder then creating range of simple light circuits using equipment in a resource kit.	Second	Electronics
Rampaging Chariots One free kit to new	A robotics kit developed by Leonardo and promoted by	Third/fourth, Senior phase	Robotics

schools or £100 per kit	YESC; clubs design and create a radio controlled sporting robot and are invited to the Scottish Robotics Games.		
Circuit Training Free to download	A downloadable resource of simple electronic projects.	Second	Electrical engineering
Engineering			
Greenpower Challenge Approx. £1500-£3,300	YESC manages this programme in Scotland to support clubs to design and construct an electric car ; Goblin for Primary and F24 for Secondary. Schools are then invited to race their cars at local and national competitions.	Second, third/fourth, senior phase	Automotive and mechanical engineering
I'm an Engineer, I can Help Here! £200 per kit	A suite of materials to introduce different engineering disciplines through a series of hands-on STEM challenges responding to a flooding emergency.	Second	Various Engineering Disciplines
Go Forth Again! Free to download	Go Forth! is a civil engineering challenge to design and build a suspension bridge , commemorating the new Queensferry Crossing over the Forth.	Second, third/fourth, senior phase	Civil engineering
Food & Drink			
Science on the Menu £270 per kit	Investigating food science , and technology challenges associated with a chocolate factory, through a range of experiments included in a resource kit, culminating in the Great Scottish Dessert Challenge to make ice cream in a bag.	Second	Food and Drink
Life Science			
Investigating Forensics Free to download	A downloadable resource for clubs to learn about forensic science by running setting up a Crime Scene Investigation.	Second	Forensic Chemistry
Gene Scene Free to download	A downloadable resource to learn about the fascinating world of Genetics .	Third/fourth	Genetics

Cross sectoral STEM activities			
Mysterious Maths Free to download	A selection of fun challenges exploring the mystery of maths. The three activities; Tiling, Counters and Folding, allow pupils to discover and experience maths hands-on , to literally get a 'feel' for maths.	Second	
Little Lighthouse £150 per kit	An interdisciplinary project for Little Engineers using lighthouses as a context to introduce various STEM topics including electricity and circuits, weather and digital coding.	First	
Sensational Science Free to download	Investigating the science of sight, hearing, smell, taste and touch through a range of activities in a downloadable resource.	Second	
Science Clubbing Free on request	Themed physics, chemistry and biology activities – Teacher's Notes available on request.	Second	
Science of a Night Out Free to download	STEM Investigations around the themes of getting ready for a night out to bowling, karaoke and ice skating, including the physics of high heels and what put's the pop in popcorn.	Second	
STEM in a Shoebox Free to download	A downloadable resource of simple technology challenges including a coin sorter and smartphone projector, all using a shoe box!	Second, third/fourth, senior phase	General STEM
Pizza Box Challenges Free to download	A downloadable resource of simple electronic and technology challenges using a pizza box.	Second	General STEM
Tried and Tested Technology Challenges Free to download	A downloadable resource of simple technology challenges.	Second	General STEM

New for 2017/18			
Don't waste a Drop! Limited free kits	Following the success of Construct a Crane, we are delighted to be working with Anglian Water Business on a water themed engineering challenge.	Second, third/fourth, senior phase	Water management & conservation
Knots to Watt's Limited free kits	A new offshore wind challenge in partnership with The Crown Estate Scotland, Vattenfall and Institute of Physics Scotland.	Second, third/fourth, senior phase	Renewable energy
Life (title TBC) Kit cost TBC	A new interdisciplinary project using the theme of 'life' to support STEM learning in P1.	P1 (early)	General STEM
Lift & Load Kit cost TBC	A new challenge in partnership with BAE Systems for schools to learn about the engineering in constructing boats and cranes, before designing and build their own models.	third/fourth, senior phase	Engineering/ manufacturing

Events

We deliver a programme of events throughout the school year, and information will be included in our newsletters and in the [Events](#) section of our website. Thanks to sponsorship from our partners, all of our events are free to attend and we can sometimes offer support with reasonable travel expenses if required.

Schools receiving resource kits will be invited to an accompanying course to support teachers' professional learning by taking you through the contents of the kit to familiarise you with the equipment and the project aims.

We invite clubs to bring 6 members to represent the school at Regional and National Celebration of STEM events. Clubs will have the opportunity to showcase their work to a panel of judges and other clubs, participate in a series of STEM Challenges set by local companies and compete in our annual topical STEM competition – for 2018, **Don't Waste a Drop** will challenge teams to build a pump and pipeline which will be tested with water at our Celebration events! These popular events give young people an excellent opportunity to present their work and to put their problem solving and team work skills to the test. For club leaders, the event is a phenomenal opportunity to meet and network with other teachers delivering STEM activities and be inspired by their club showcases. Prizes for various categories are presented at the end of the day. We hope you will join us:

- Regional Celebration, Dundee Science Centre, Friday 2 March 2018
- Highlands & Islands Celebration, Eden Court Theatre, Inverness, Friday 9 March 2018
- North East Celebration, BP Head Office, Aberdeen, Friday 16 March 2018
- Ayrshire Celebration, Dumfries House, Cumnock, Wednesday 21 March 2018
- National Celebration, Glasgow Science Centre, Friday 8 June 2018

Funding

We appreciate money for resources is in short supply in most schools, so we aim to support schools with small grants of up to £100.

Information about availability of grants will be included in our newsletters and on our website. Note: any funding provided is for equipment and materials for your club and not for travel/visits to Science Centres etc.

Cash prizes of up to £750 are presented to winning clubs at our Celebration of STEM events. This can provide a great support to the club to build on the success and continue delivering STEM activities.

Cheques will be made payable to the school so remember to speak to relevant colleagues to ensure they are aware that the funding is for the club, and that you know how to access it when required to purchase resources or equipment for the club.

Additional funding opportunities include the [British Science Association](#) for British Science Week and [Royal Society](#) partnership grants. We advertise any school STEM grants through our newsletter and on our website.