



IET Futures Fund

Impact Report | 2020

IET Futures Fund raises money to support the next generation of engineers, to find solutions to our most pressing problems.



We would like to thank all our donors for their continued support, flexibility and understanding through the challenges of 2020. We were delighted to find out more about some of the many members who supported us in 2020.

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"I am retired now and I would like to say that engineering has been a good career to be part of and therefore I am happy to support our engineers of the future."

Alan Fennell Eng Tech MIET

Alan began his career as an apprentice in electrical engineering. He enjoyed a career spanning 33 years, latterly working for Hillingdon Council's housing department. Alan has passed on his love of engineering to his two sons who are both engineers in different fields.

"I always wanted to be an engineer and have had a very fulfilled life as an engineer and member of the IEE/IET. It's great to be able to help someone else become a future engineer!"

Edwin Bolton BSc MIET

Edwin began his career working on computers for naval application, followed by more than 36 years in computing and software technologies. Recently, Edwin has worked in cyber security for Vodafone Group.

"It is my turn to pass what I have received to the younger generation and the future."

Pimonpan Phurappa (Associate Member)

Pimonpan is a Knowledge Transfer Partnership (KTP) Associate at the University of Exeter, helping SME company Inyanga on offshore renewable energy technology. She completed her MEng in Energy Engineering in 2020 at the University of Exeter and is also a STEM Ambassador.

"If we 'support today' they may 'deliver in the future'. There is a hidden talent in all children, let STEM initiatives and other inspiration help show them the way."

Brian Aldred IEng MIET

Brian is a retired Telecommunications Consultant with a career covering Information, Communications and Systems (ICT) for Road, Rail & Airport Information, oil & gas, insurance, education and defence sectors. Brian inspired and supported his two children in their STEM careers, one works for the BBC and the other is a Model Maker for LEGO® UK. They are helping in their own way to put UK engineers onto the world stage.

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Foreword

The vital necessity of skilled engineers, now and in the future, came into sharp focus in 2020.

Thanks to the steadfast support of our funding partners we were able to continue our work to inspire future engineers.

We adapted our innovative STEM education programmes so that children at home and in schools around the world could still explore engineering. Our support for engineering students and apprentices has increased at a time of great uncertainty and economic hardship.

Graduates from our scholarship and bursary programmes are showing their commitment to the profession and many are already paying it forward through voluntary activities.

October 2020 marked the start of our 150th anniversary year. We set ourselves two goals. First was to reach 1,500 scholarships and

bursaries awarded since 2013. I am proud to say we will achieve this by October 2021.

Secondly, thanks to the £1.45 million received in donations to the Futures Fund programmes since July 2018, we are well on the way to realise our match-funding target of £2 million.

The IET is first and foremost a membership organisation and the support individual members give is heartening. Whether it is a personal donation or an introduction to a company your support is warmly appreciated.

Thank you to all our donors for supporting the Futures Fund.



Professor Bob Cryan CBE DL CCMi
CMgr FEng FIET
IET Development Steering Group Chair

Continuing to inspire the next generation through lockdown and beyond

In 2020, our STEM education programmes responded rapidly to the impact of COVID-19.

Whilst direct delivery of our Education programmes was put on hold, we wanted to do everything we could to make sure children and young people didn't miss out completely. We swung into action and began offering a range of exciting and innovative virtual opportunities for hands-on engagement with STEM.

The **IET Education website** provided a selection of free primary and secondary STEM Education resources. Support and advice was also offered to parents and teachers.

We worked with STEM ambassadors, IET Education Officers, teachers and parents to produce a range of

videos with children showing parents how to create some fantastic STEM experiments using everyday items found at home. They could also simply refresh their memory on some popular lesson topics.

The response to the IET Education resources during this unprecedented year was astounding with over 57,000 downloads of our teaching resources, compared to just over 16,500 in 2019.

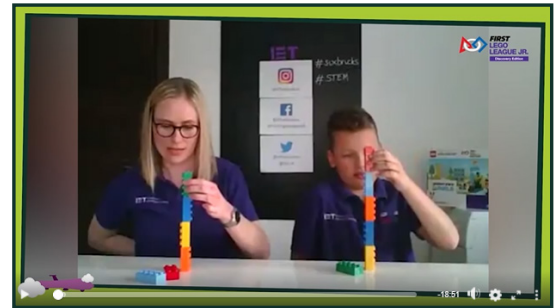
We offered a virtual version of the **Faraday Challenge Day** to children aged 7-15 which they could do at home, independently or with their families.

Our **FIRST® LEGO® League** team distributed surplus kit for free to schools whilst they remained open during lockdown to vulnerable children and children of keyworkers. The activities were adapted and used in class across multiple age groups. Disadvantaged families have also been given kit.

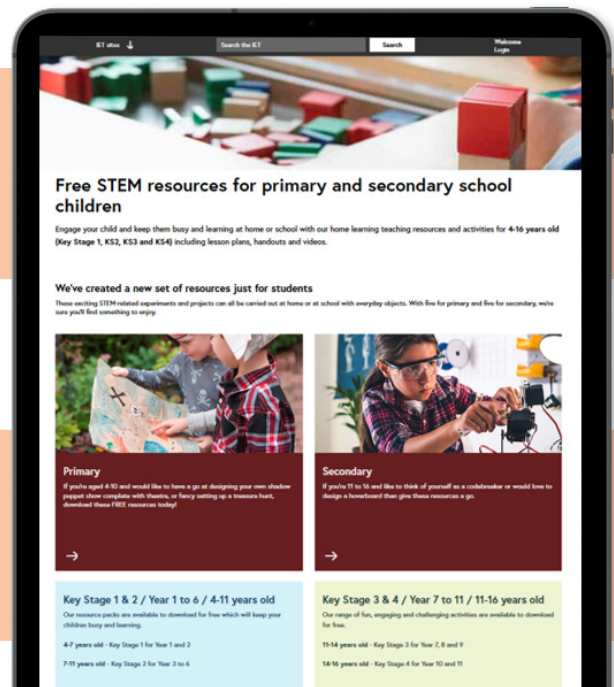
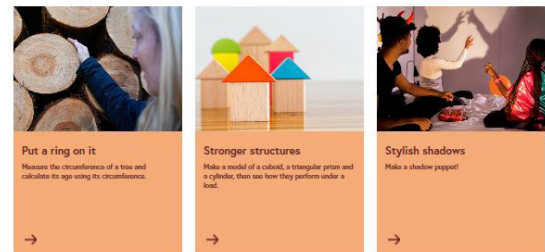
- 47 schools were given kit for **FIRST® LEGO® League Discover**, for 4-6-year olds.
- 104 schools were given kit for **FIRST® LEGO® League Explore**, for 6-9-year-olds.

We delivered daily LEGO Six Brick Challenges on Facebook Live and YouTube, which attracted over **79,000 views**. We also launched Explore and Discover @Home, enabling children aged 4-9 to engage in the programmes at home with their families. In 2020, we had 66 sign ups in total, with approximately 136 children participating.

Thousands of disadvantaged children and young people do not have access to virtual learning opportunities. The catastrophic impact of this digital divide has been highlighted during the pandemic. The IET and partners have launched the Digital Poverty Alliance to tackle this long-term problem.



Lucy Owen (Discover Coordinator) and her son, Myles leading the Six Brick Challenge.



Faraday Challenge Days

We rose to the challenge of school closures by taking this hands-on team activity online.

Between January and March 2020:



65

days were held



2,162

students from 127 schools took part



14%

were disadvantaged schools



52%

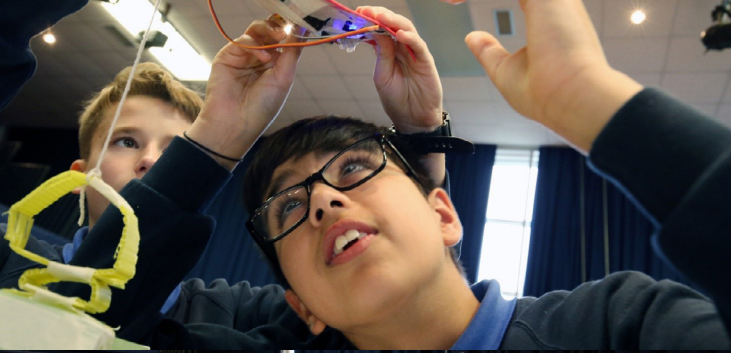
of participants were girls

Normally delivered in schools across the UK, in April 2020 we launched a virtual version of the Faraday Challenge for 7-15 year olds with our theme partner Airbus.

The challenge remained the same, to design a product to support the delivery of humanitarian aid. This could be done at home individually, as a family or virtually as a group. Schools teaching children of keyworker and vulnerable children could also participate. Submissions were made online and reviewed by the Challenge Leaders.



Challenge Leaders Keira and Phil deliver the brief for the 2020 Virtual Faraday Challenge



There were 165 entries in the 2020 Virtual Faraday Challenges, involving 257 participants.

The 2020/21 season began with continued uncertainty. Alongside our new theme partner Network Rail we adapted the challenge to be delivered in-school by teachers with remote support and as a Virtual Challenge. Network Rail challenged students to design a product to sustainably manage increasing numbers of passengers using their network.

We were able to deliver three Teacher-led days in November and December. This involved 112 students from three schools. 77% of participants were female.

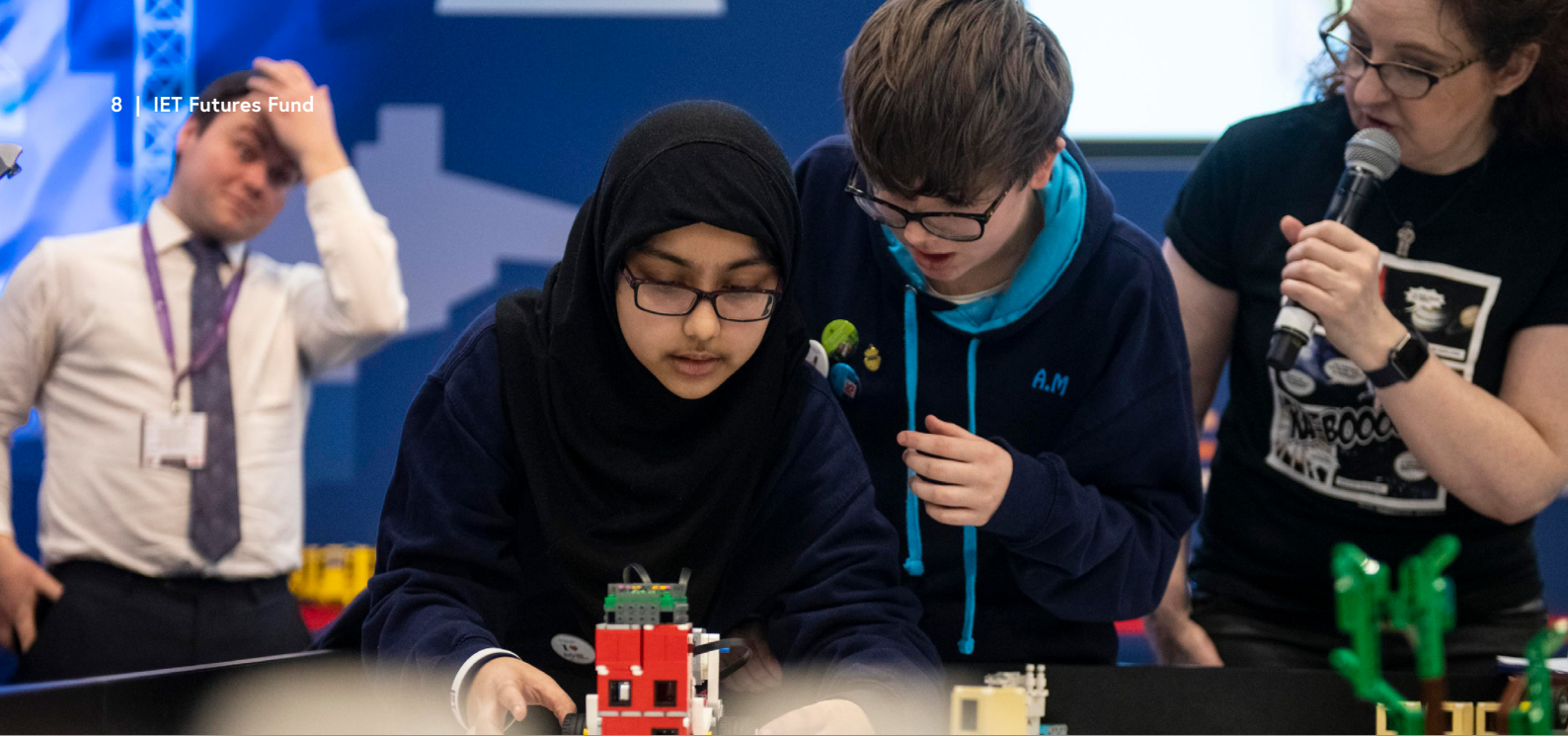
We will continue to support students and teachers to take part in the Teacher-led days and Virtual Challenge for the rest of this season. We look forward to being back in schools in September 2021.

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The Teacher-led Challenge Day was a fantastic opportunity for the pupils, especially in these challenging times at school where they are not allowed practical work.

Teacher

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IET *FIRST*[®] LEGO[®] League

You are never too young to be an engineer. As the UK and Ireland partner of the global *FIRST*[®] LEGO[®] League competition, we are helping thousands of children to discover this — even through a pandemic.

Challenge: a global STEM competition for 9-16 year olds.

Explore: a non-competitive STEM challenge for 6-9 year olds.

Discover: introduces young children aged 4-6 to STEM concepts as they learn through play.

This season's themes, RePLAY^(SM) and PLAYMAKERS^(SM) are centred around play and being active.

Challenge

By the end of March 2021, 643 teams (over 5,000 children and young people) had signed up for the 2020/21 season. The tournaments and finals have been pushed back to summer 2021 to give teams enough time to prepare following school closures.

All tournaments will be held remotely using a specially designed Remote Event Hub, produced by our global partner *FIRST*®. The virtual tournaments and finals have the advantage of being able to run several tournaments concurrently and will be fun, engaging and interactive.

Explore

We have 418 teams registered for the 2020/21 season so far, reaching approximately 2,410 children. The Festivals, where children present their work to Reviewers, will take place remotely in the Spring and Summer terms. Many schools have been using our class pack option, which can be delivered to the whole class with an in-house Festival at the end of the programme. This is a particularly useful option for schools

that have been unable to offer lunchtime and after school clubs.

Discover

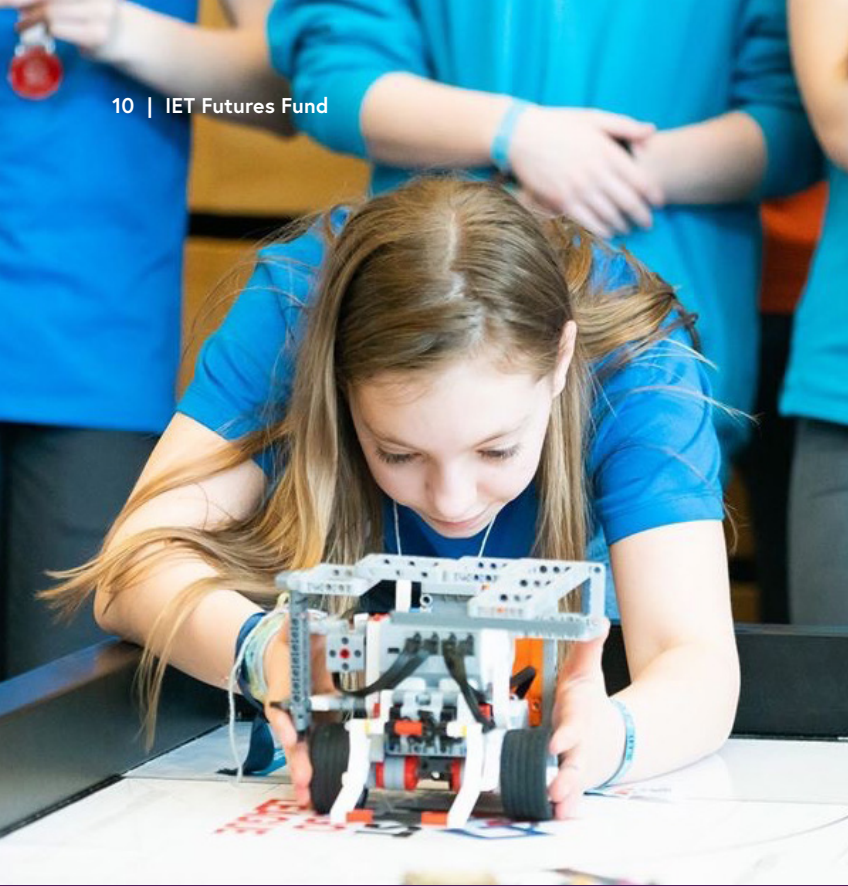
Discover has remained the most resilient of the three divisions despite the challenges presented by Covid-19. After the first lockdown, early years teachers told us that rather than needing to focus on catching up and the curriculum, they were very much looking forward to enabling the children to work on their social and emotional skills again, which are key elements of Discover. We have had 976 sign ups for Discover so far, equating to 3,828 children.

Funding

We introduced an application system to enable schools and groups experiencing disadvantage to apply to us to cover the costs of funded kit and registration. This had an excellent response and we supported 197 applications out of 239 across all three divisions in 2020.

Introducing this system helps us to direct funding where it is needed most.





Florence's Story

Florence Galley, 15
IET *FIRST*® LEGO® League participant

If you were to become an engineer, what problem would you want to solve? What is the most important problem that engineers need to solve?

If I were to become an engineer, I would like to help solve climate change because it is a huge global issue which will, and is, affecting many factors such as weather, pollution, crop growth etc.

I believe climate change is a growing concern which should be addressed as quickly as possible. So far climate change has affected the world in many ways. For example in the UK we are now 30 times more likely to have a heat wave, which 3,400 people died from in the years 2016-2019.

If you could pursue any STEM career when you are older, what would you want to do?

I would choose to pursue a STEM career in theatre as a set designer. This is because I love theatre as well as engineering, and so it would be the perfect opportunity to be creative as well as construct and engineer.

What subject did you look into for the Innovation Project when you took part in *FIRST*® LEGO® League CITY SHAPER Challenge? What did you learn?

We decided to study adding solar panel streetlights to areas in our community.

These were an efficient way of creating light while helping to save money and the earth. We learnt that by using a different source of energy to supply streetlights in the UK, which was green and eco-friendly, we would be able to reduce the cost to supply them dramatically as well as decrease the carbon dioxide and greenhouse gasses produced to run them.

If you had the power to change something in the world as an engineer, what would you do?

I think I would like engineers to work on more sustainable, environmentally friendly energy supplies. This would help reduce the amount of pollution produced by power stations, or greenhouse gasses produced by fuel used to run a car. As a result, climate change would be reduced along with the problems that come with it.

Why support the next generation?

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**BECAUSE WE NEED
MORE SUSTAINABLE
ENERGY SUPPLIES
THAT WILL REDUCE
POLLUTION**

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Florence Galley, 15
IET FIRST* LEGOS* League participant

IET Futures Fund raises money
to support the next generation
of engineers to find solutions to
our most pressing problems.
theiet.org/futuresfund

Futures Fund

IET The Institution of
Engineering and Technology

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Presidents Partnership

The IET benefits from the collective expertise and experience of engineers who give their time to support the work of the IET, some of whom have served as Presidents.

2020 saw the launch of the Presidents Partnership with a number of Presidents of the IET opening doors and making donations. Their support for the individual programmes encompassed by the Futures Fund has made a significant difference. We heard from some of those who have lent their support and would like to encourage others from across the IET to join them.

The Presidents Partnership is just one of a number of ways IET members can join together to assist the next generation of engineers.



"Supporting the Futures Fund is a very effective way of helping people from all backgrounds discover the exciting opportunities that a career in engineering offers."

**Chris Earnshaw OBE FIET, IET
President (2008-09)**



"We all know how important it is to encourage our young people to become our future engineers and the IET is doing amazing work with young people. I urge our members, particularly Past Presidents and other retired Fellows, to join with me to make donations to support these programmes."

**Keith Thrower OBE FIET, IERE
President (1987-88)**



"It is extremely important to capture the interest of young people in STEM at an early age. LEGO was instrumental in my early years in stimulating my interest and I would like to encourage today's young people to participate in the IET *FIRST*® LEGO® League and benefit from the scheme."

**Professor Sir Christopher Snowden
FIET, IET President (2009-10)**



"I am fortunate to have been born at a time when the state paid for my university education. As a Past President of the Institution I am motivated to support the IET's bursary scheme to present opportunity for young people in our discipline to follow their passions and become successful."

**Sir Robin Saxby HonFIET, IET
President (2006-07)**



"My early career benefitted greatly from the Royal Navy's sponsorship of my engineering degree, followed by multidisciplinary training including practical experience and a post-graduate diploma. I was lucky. Not many career paths have such extensive financial and training support. As IET President I fully supported our impressive educational assistance for schools and the scholarships and bursaries for students. I believe the Engineering Horizons Bursaries, particularly for degree apprenticeships, will strengthen industry's skills and capabilities."

**Commodore Barry Brooks FIET, IET
President (2013-14)**



"During the early stages of my career the IET supported and nurtured me when I was most in need of help. It is now a privilege to be able to do the same for others and hopefully, they in turn will get to a position where they can offer a helping hand to future generations of engineers. Ours is a wonderful profession. I am delighted to be able to assist others in joining it."

**Professor Bob Cryan CBE DL
FIET IET Deputy President
(2020-22)**



IET Awards

Diamond Jubilee Scholarships and Engineering Horizons Bursaries were introduced to show our commitment to the engineering profession by supporting those at the threshold of their career.

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I think this is a wonderful scheme. It not only helped me financially but ... I met so many inspiring people along the way and it opened the door to my graduate role.

”

2020 Graduate

The awards provide funding support throughout a student's degree or apprenticeship as well as the opportunity to get involved with the IET and where possible the donor supporting their award.

Interest in both programmes has grown steadily over the past few years but 2020 saw a massive increase in the number of applications compared to 2019.

From more than 900 applications our independent panels assessed nearly 500 eligible applicants and we were able to offer awards to 174 men and women.

Successful students and apprentices come from a wide variety of backgrounds and routes into engineering.

Since 2013, when we awarded our first Diamond Jubilee Scholarship, more than 1,400 individuals have received a scholarship or bursary.

In 2021 to mark our 150th anniversary we are looking forward to meeting the 1,500th recipient of these life-shaping awards.

We are looking for applicants who can show their commitment to engineering. Diamond Jubilee Scholarships are awarded to those achieving a minimum of ABB at A Level or equivalent. Engineering Horizons Bursaries are awarded to those with vocational qualifications and/or who are overcoming personal obstacles.

Diamond Jubilee Scholarships

72 awarded



49%

Awarded to women



17%

Donor funded



11%

Match funded

Engineering Horizons Bursaries

102 awarded



34%

Awarded to women



46%

Donor funded



34%

Match funded

20%

Awarded to apprentices





Simone Wilson

Degree Apprentice Sellafield

**BEng Electrical and Electronic Engineering
University of Central Lancashire**

IET Engineering Horizons Bursary

"I never thought engineering was an option for me due to it being a male dominated industry. Only through my research did I discover how wrong I was, and how many opportunities are available. I realised that University was not the only option into a career in engineering and that a Degree Apprenticeship was the right option for me as I loved working and learning on the job.

I was offered a position as a CE&I Design Engineer Degree Apprentice at Sellafield and haven't looked back since. It has been the best opportunity and I am grateful to be doing something that I am passionate about.

The Engineering Horizons Bursary has helped me to invest in Electrical and Electronic books. It helped to pay for extra training courses for continued professional development, commuting cost and a laptop so that I can study outside of work.

The Bursary helps me to solely focus on successfully completing my Apprenticeship without any financial pressure and worry. My Degree Apprenticeship is a five-year scheme, ending in June 2022. I will graduate debt free and with five years' experience working as a CE&I Design Engineer in the Nuclear Industry.

Throughout the course I have the opportunity to rotate around the business on different work placements, this ensures I get a broad experience in each specialist area of CE&I engineering, so by the end I will have experience in multiple areas opening up more opportunities. Pre-Covid, I was working full time in the office

and taking opportunities to visit our site in Cumbria. I've been working from home since March 2020 — it was quite challenging at first adapting and getting the IT set up as home working was quite new for the company, but I have had fantastic support from Sellafield throughout. My studies, exams and end-point assessment for the apprenticeship also went virtual.

I feel very lucky to have a secure job and to have been able to keep learning and developing in my role. Whilst there have been challenges, I have learnt a lot and been able to adapt to new situations. I'm looking forward to continuing with my course and apprenticeship, progressing on to Masters' level next academic year. I'm also looking forward to getting back on site when I can.

In the future, I would like to work towards becoming a Chartered Engineer. I am passionate about promoting engineering to the younger generation, especially because this is something I lacked when I was growing up."



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**BECAUSE
UNIVERSITY
ISN'T
THE ONLY
ROUTE
INTO
ENGINEERING**

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Nikita Kamath

MEng Engineering

University of Cambridge

Diamond Jubilee Scholarship
supported by the Royal Commission
of the Exhibition of 1851

"Everything I do as an engineer I do as part of a team. Having a Diamond Jubilee Scholarship means I am part of a group of scholars who I know will be interested in extending their engineering experience.

I have been able to become more assertive and more entrepreneurial, taking part in challenges like MAKEathon with another Diamond Jubilee Scholar. Financially, the scholarship has helped me to focus on learning, and meant I can afford to set aside funds to buy materials to use on the university's 3D printer, extending my practical experience."

This practical experience came in very useful when Nikita and team-mates won the Cambridge MakeIT Fruit & Veg MAKEathon. Their product idea for low-cost eco-friendly packaging to reduce damage to produce on the way to market caught the judges' eye.

Since their win the team have joined the Centre for Global Equality (CGE) Cultivator Program and Nikita has been researching how smallholder farmers in Uganda could make use of their ideas.

"My childhood was in India and I have seen how a lack of resources impacts farmers. I wanted to do something practical to help. But we also want to work with the farmers as we don't want to create the wrong change."

I focus a great deal on AI in my degree, the scholarship means I can diversify my skills, enabling me to take part in activities like this."

Nikita admits that studying through the COVID-19 pandemic has been challenging.

"I have found it hard to adjust to online lectures and all our practical work has come to a halt.

However, I have learned to prioritise my time and say no to things. I am looking forward to getting back to the lab."

“

Everything I do as an engineer I do as part of a team. Having a Diamond Jubilee Scholarship means I am part of a group of scholars who I know will be interested in extending their engineering experience.

Nikita Kamath

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Graduate Survey

Graduates from both the scholarships and bursaries programmes are proving themselves to be determined in their aspiration to become engineering professionals.

Despite the hardship and disruption that COVID-19 brought their way, 72% of the 2020 graduates from both programmes were either working or studying in engineering and technology by the end of summer 2020.

For those who graduated between 2016 and 2019 a remarkable 75% are employed in engineering and technology and a further 11% are undertaking post-graduate study.

Even the 7% who classed themselves as not working in engineering and technology were in roles that made good use of their skills.

Our graduates have successfully gained positions in many of the most well-known engineering companies as well as tech start-ups. Many more will join the next generation of academics.

In comparison, Engineering UK reported 66% of engineering students who graduated in 2017 were employed in engineering within six months. (Engineering UK 2019 Report www.engineeringuk.com/research/engineering-uk-report/).

These awards make a difference — not just financially — but through the networking and industry experience that they bring.

“

The scholarship has allowed me to pursue extracurricular activities and encouraged me to give back to the community. Both of these things helped develop my passion for engineering and the desire to complete a doctorate degree that is focused on using engineering to make a difference to people's lives.

Sophie, studying for a PhD. Diamond Jubilee Scholarship supported by the Royal Commission for the Exhibition of 1851

Moving from home on an apprentice salary is certainly not an easy task. I was considering switching choices as it became unsustainable to continue working, paying for travel and rent. The bursary covered all the travel needed for the year, which took a lot of weight off my shoulders.

Katriya, Development Engineer. IET Engineering Horizons Bursary supported by Exilarch's Foundation

The award gave me confidence to continue into an Engineering career, rather than pursuing a business career path, or some other path unrelated to my studies. My internship with BT gave me insight into the different components of the electronic engineering industry and helped me choose the direction for my further career.

David, Hardware Design Engineer. Diamond Jubilee Scholarship supported by BT

The support and networking opportunities provided by the IET gave me more confidence to apply for higher proficiency jobs and also encouraged me to chase my initial goals. I am very grateful that I was awarded an IET bursary. I found this experience a unique and valuable achievement in my professional life which I am really proud of.

Mehdi, Graduate Electrical Engineer. IET Engineering Horizons Bursary

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**We received 535 total responses to the Graduate Survey from 654 recipients, or 82%.*



Devang Shah MEng

Electrical Engineering Graduate
at Network Rail

IET Engineering Horizons Bursary

2016 – 2020

Electrical and Electronic
Engineering at Aston University

They say that when one door closes another opens.

When Devang missed out on the grades he wanted at A Level he was offered the opportunity to do a Foundation degree at Aston University.

"It gave me a path towards what I wanted."

The Foundation degree led to an MEng in Electrical and Electronic Engineering and a successful application for an IET Engineering Horizons Bursary.

"The bursary meant that I could focus on my studies and also on my all-round development as an engineer.

It's not just what you learn in a lecture. Being a member of the IET meant I could listen to talks and engage in a community of other engineers."

Devang spent his Year in Industry with Network Rail working on a Train Energy Strategy project, which considered battery operated trains as a method of saving energy. The placement was so successful he was offered a graduate role when he finished.

"During the year I must have completed more than 50 hours of volunteering, visiting schools to run STEM challenges, instil ideas of safety and even conduct mock interviews with sixth formers.

It also provided me with a lot of data for my final year project which was a great help when we went into lockdown."

Like thousands of students Devang had to complete his last term of teaching and sit his Finals while in lockdown.

"It was a challenging time, but the university supported us as best it could and made adjustments."

Now a few months into his graduate scheme Devang has already set his sights on his next goal of professional registration and becoming a Chartered Engineer.

“

The bursary meant that I could focus on my studies and also on my all-round development as an engineer. It's not just what you learn in a lecture. Being a member of the IET meant I could listen to talks and engage in a community of other engineers.

”

Devang Shah MEng





Look Ahead

2021 will see the culmination of our 150th anniversary celebrations. Being a #DifferenceMaker has been the challenge set to all – now and in the future.

The school pupils, students and apprentices that we support through our programmes are already on the road to making a difference – through their ideas and their ambitions.

These are the landmarks we look forward to reaching in our 150th year:

- The 1,500th recipient of a Diamond Jubilee Scholarship or Engineering Horizons Bursary
- Return to hands-on STEM activities after lockdown
- £2 million of matched funding enabling growth in all our activities

We would like to invite you to be a #DifferenceMaker by:

- Introducing us to your company
- Making a donation
- Leaving a legacy to the Futures Fund

Why support the next generation?

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**BECAUSE
ENGINEERING
MAKES THE WORLD
A MORE EXCITING
PLACE TO LIVE IN**
||

Fred Akuamoah, 29

IET Engineering Horizons Bursary recipient

Our Donors



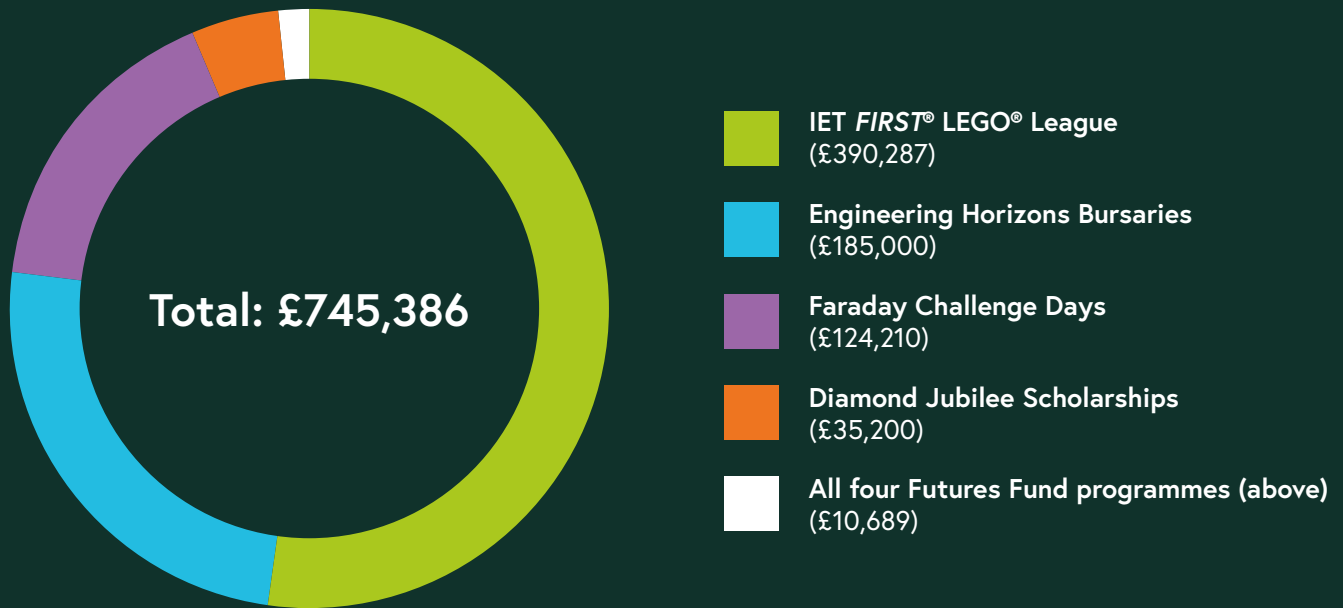
We are grateful to the many individual members who gave to the Futures Fund and through the Take Your Place option.

Presidents Partnership

Commodore Barry Brooks CMarEng FIMarEST CEng
FCGI FIET
Prof Bob Cryan CBE DL FEng MBA DSc CEng FIET
Mr Chris Earnshaw OBE FEng BSc CEng FIET

Mr Keith Thrower OBE FEng CEng FIET
Sir Robin Saxby FEng FRS BEng CEng HonFIET
Prof Sir Chris Snowden BSc MSc PhD FRS FEng CEng FIET
Sir Alan Rudge CBE KB PhD FEng FRS CEng HonFIET

2020 Income pledges (by funding use)



Our match funding goal

We will match every pound donated to IET Futures Fund so together we can reach our target faster.



Get in touch

If you're passionate about the future of engineering, contact the IET development team to find out how you can help make a difference.

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