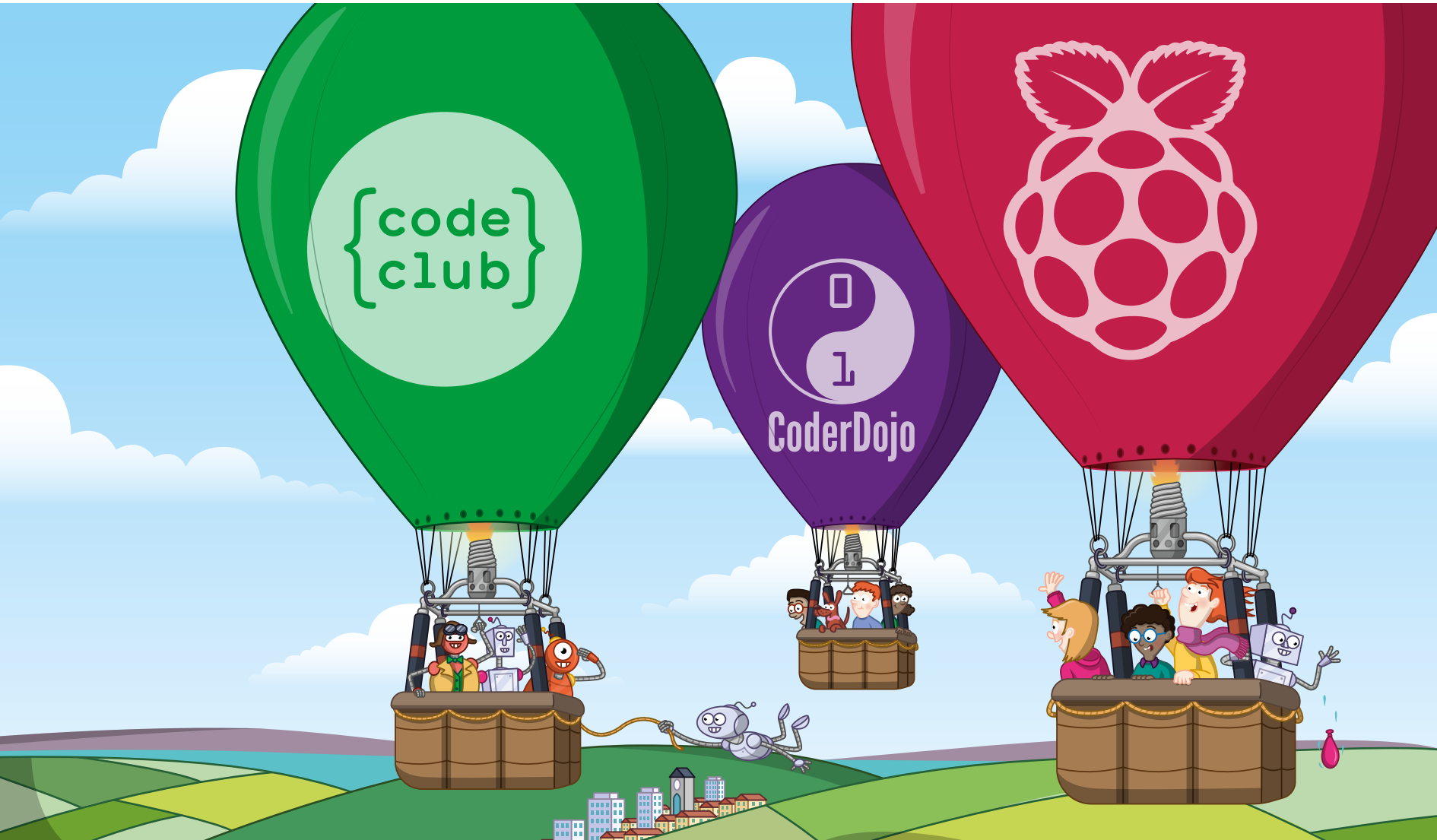


Raspberry Pi Foundation

Annual Review 2019



**ANNUAL
REVIEW**
2019





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MISSION

Our mission is to put the power of computing and digital making into the hands of people all over the world. We do this so that more people are able to harness the power of computing and digital technologies for work, to solve problems that matter to them, and to express themselves creatively.

Our strategy:

- We engage millions of young people in learning computing and digital making skills through a thriving network of clubs and events, and through partnerships with youth organisations.

- We enable any school to offer students the opportunity to study computing and computer science through providing the best possible curriculum, resources, and training for teachers.
- We work to deepen our understanding of how young people learn about computing and digital making, and to use that knowledge to increase the impact of our own work and to advance the field of computing education.
- We make computing and digital making accessible to all

through providing low-cost, high-performance single-board computers and free software.

We believe that the best way to learn computing is through making something that you care about and sharing it with others. Learning computing can sometimes be

challenging, but it should also be fun. Our approach is deliberately playful, but we take our mission and learning goals very seriously. We think that the opportunity to develop the skills and confidence to make things with computers should be accessible to all.

“ Putting the power of computing and digital making into the hands of people all over the world ”





INTRODUCTION

FROM FOUNDATION CHAIR

DAVID CLEEVELY

Welcome to the 2019 Annual Review for the Raspberry Pi Foundation. It has been another year of major progress for the Foundation and our mission to help more young people learn about computing, computer science, and digital making.

Code Club and CoderDojo continue to grow their reach and impact, supported by an incredible community of volunteers and educators, with hundreds of thousands of young people attending free coding clubs every week in every corner of the globe.

Through partnerships with the European Space Agency, the Scout Association, and the National Citizen Service, tens of thousands more young people have been introduced to the exciting possibilities of creating with digital technologies. Millions of people have used our free online resources, and tens of thousands of educators have used our free online

courses to develop their own skills and confidence.

Perhaps our most significant achievement this year has been the establishment of the National Centre of Computing Education. Working with our partners, and supported by the UK Department for Education, we are delivering a comprehensive programme of teacher training and support for computing in every school in England. This is one of the most ambitious attempts to level up computing education anywhere in the world, and hopefully a model that will soon be replicated in other countries.

We also launched the world's largest-scale trials to test strategies to improve gender balance in computing, working with hundreds of schools to rigorously evaluate innovative approaches to address the women in technology gap. This reflects both our commitment to tackling the challenges of gender



diversity and to being led by research and evidence.

It was also another great year for our commercial subsidiary, Raspberry Pi (Trading), which launched the latest iteration of its flagship product, Raspberry Pi 4, in June, alongside a range of supporting kits and accessories. At the start of December, total lifetime shipments of Raspberry Pi computers had passed the 30 million-unit mark, a figure beyond our wildest dreams when I first became Chair. Equally, it would have seemed far-fetched

to imagine back then that, at this point in our work to provide cost-effective access to general-purpose programmable computers, we offer industrial, educational, and business users a no-compromises PC experience at our signature \$35 price point. Eben and the team have once again demonstrated engineering expertise that delivers world-leading, cutting-edge technology.

The work of the Raspberry Pi Foundation and our group companies is supported by an exceptional team of Trustees,

“ Another year of major progress for our mission to help young people learn about computing ”

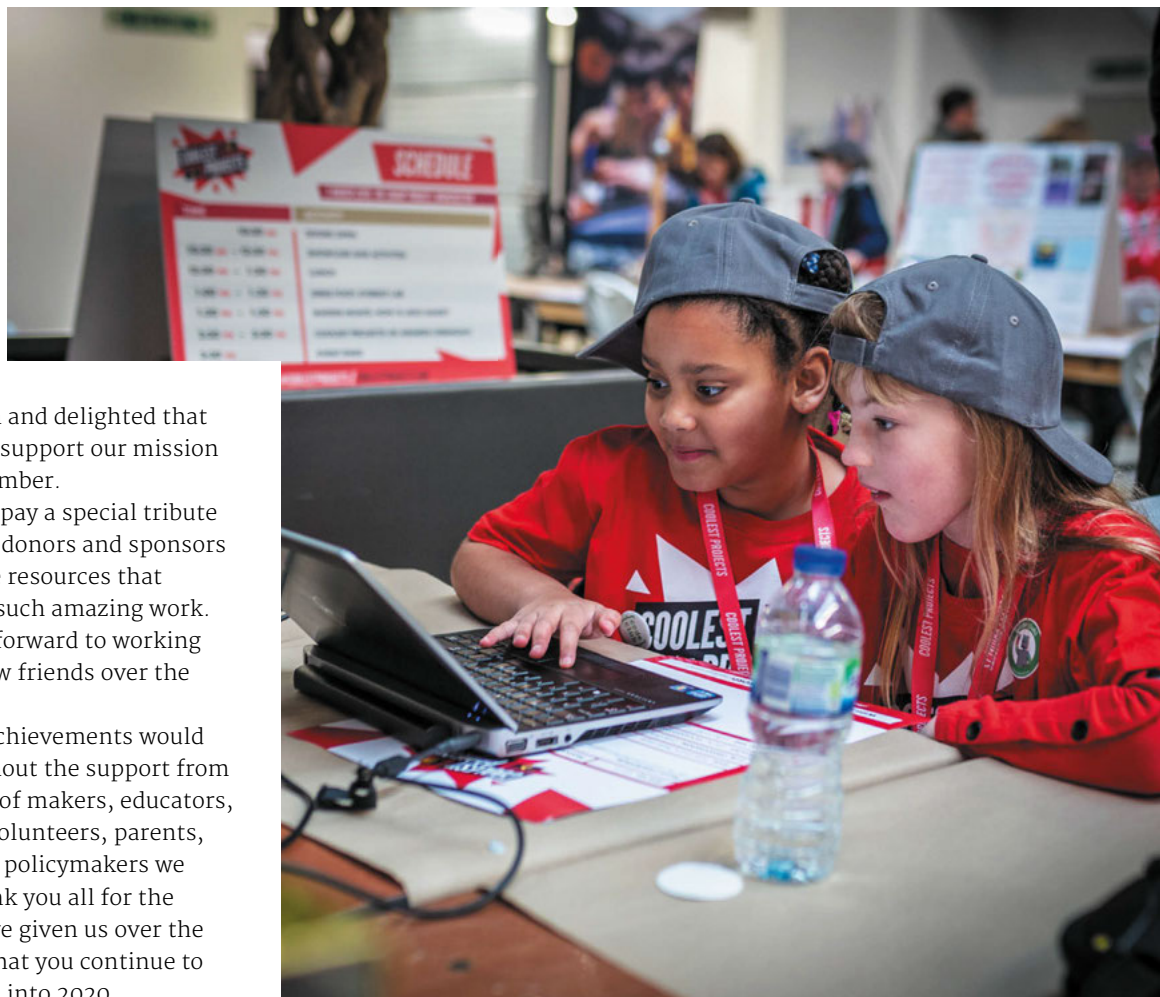
Members, and independent Directors. This year we welcomed two new Trustees to the Board of the Foundation: Kim Shillinglaw and Richard Clegg. We also welcomed Martin Hellowell as the independent Chair of Raspberry Pi Trading Limited, and Niamh Bushnell as a Director of the CoderDojo Foundation. All four are already making significant contributions.

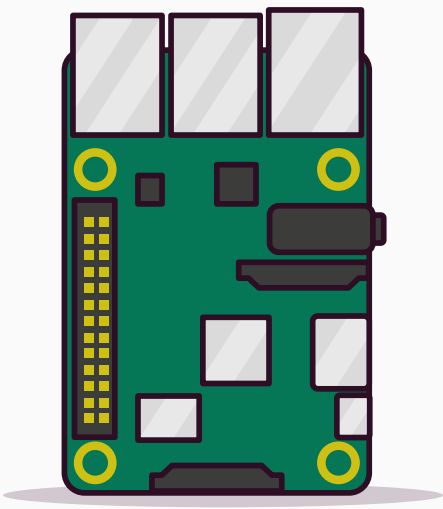
Pete Lomas stepped down from the Board of the Foundation in October 2019. During his time on our Board, he played a pivotal role in both the development of the Raspberry Pi computer and in the growth of our charitable activities. I am extremely grateful to Pete for

his contribution and delighted that he continues to support our mission as Founding Member.

I also want to pay a special tribute to the generous donors and sponsors that provide the resources that enable us to do such amazing work. We are looking forward to working with old and new friends over the coming years.

None of our achievements would be possible without the support from the community of makers, educators, young people, volunteers, parents, businesses, and policymakers we work with. Thank you all for the support you have given us over the past year, and that you continue to give as we move into 2020.





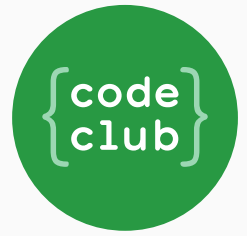
**OVER
30M**

**RASPBERRY PI
COMPUTERS**

SOLD

with 1.7M of 4B
and 3A+ in 2019

10 000+
CODING CLUBS
AROUND THE
WORLD REACHING
150 000+
YOUNG PEOPLE
EVERY WEEK



CoderDojo

14 000+

**PARTICIPANTS IN OUR EVENTS
AND SHOWCASES INCL.**



+



40%

**OF THE
YOUNG PEOPLE
TAKING PART
IN OUR PROGRAMMES**

ARE GIRLS

**Putting the power of computing
and digital making**



25 000+ YOUNG PEOPLE
REACHED THROUGH OUR PARTNERSHIPS WITH THE
UK'S SCOUT ASSOCIATION
AND THE NCS TRUST

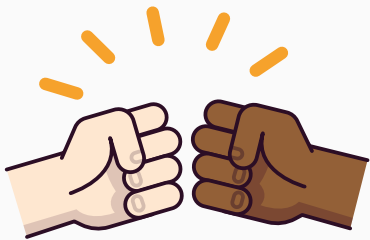


92%

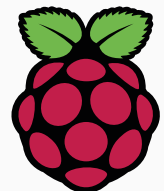
OF VOLUNTEERS IN OUR PROGRAMMES
REPORT THAT THE **YOUNG PEOPLE TAKING PART HAVE**

IMPROVED
THEIR PROGRAMMING SKILLS
AND 91% REPORT THAT THE PARTICIPANTS
ARE MORE CONFIDENT
IN THEIR COMPUTER SKILLS

20 000+
PEOPLE
VOLUNTEER
IN OUR PROGRAMMES



into the hands of people
all over the world.



STORIES FROM YOUNG PEOPLE



Aoibheann, Ireland

Aoibheann's journey with digital making started when she was eight and she decided that she wanted to build a website as part of a farm safety project at school. Her mum, Iseult, who was also one of Aoibheann's teachers, got herself onto one of the Raspberry Pi Foundation's teacher training programmes and started a CoderDojo for children in her local area. Aoibheann has gone on to build increasingly sophisticated projects using a wide range of technologies. One example is 'Hospital Holly and

Henry', a pair of interactive dolls designed to support children who are nervous about visiting the hospital. The dolls include electronic circuits that are connected to a computer. When you touch different parts of the doll, the program that Aoibheann wrote displays information about medical procedures, such as blood tests. In order to create the project, Aoibheann learned a lot more than programming, developing skills including user research, prototyping, and problem-solving.

Freddie, Wales

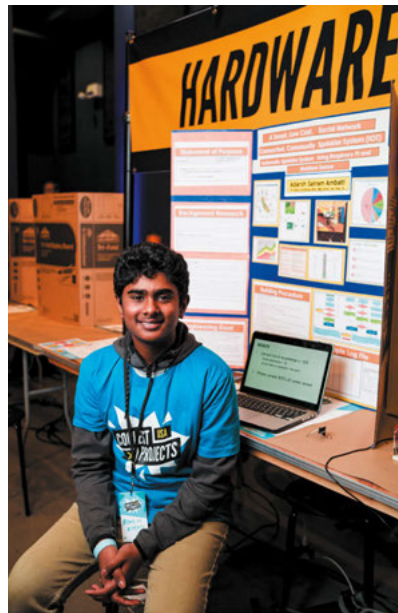
Freddie received one of the first Raspberry Pi computers as a prize in a poster competition. That led to him joining the Code Club in his school, which was run by James, a computer science lecturer from a local university. Freddie started making games, animations, and websites, but soon, started to explore how he could use technology to solve problems. He was concerned that his great-aunt

might be letting people that she didn't know into the house, so he set up his Raspberry Pi computer with a camera and sensors and trained a facial recognition program to detect whether callers are known. If they are, it lets them in and sends a text message to Freddie's mum. He has since added environmental sensors so that his family knows whether his great-aunt's house is comfortably warm for her.

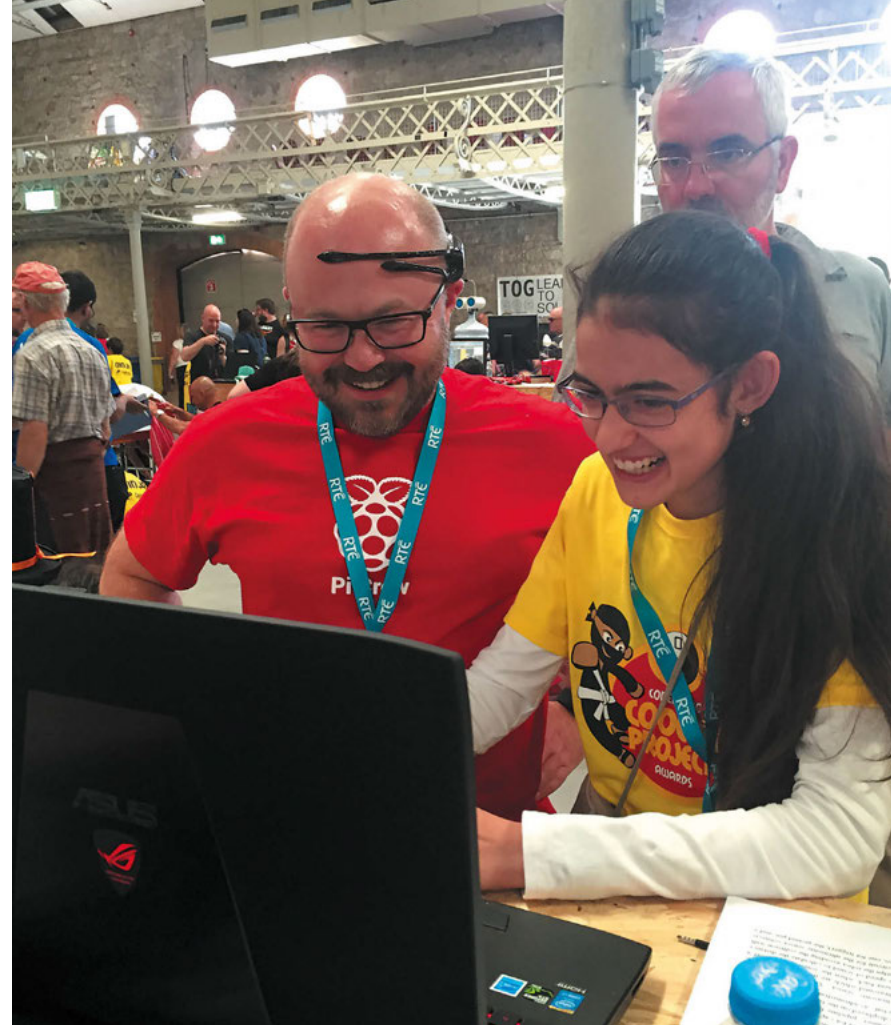


Adarsh, USA

Adarsh got involved with digital making when he started attending a local makerspace with his big brother. He lives in an area that is affected by severe drought, and he noticed that people were running sprinklers despite water shortages, and even when it was raining. Using a Raspberry Pi, some low-cost moisture sensors, and weather data from an online service, Adarsh built an automated sprinkler system that waters his mum's garden when the right conditions are met. He extended his project by connecting the system with the local authorities' website so that it detects when water is being rationed and doesn't turn on the sprinklers, to save water and avoid fines. To help his community, the system also shares automated messages telling his neighbours when it is a good time to water their gardens. His project helps not only his family, but the entire community to save water and avoid fines, whilst looking after their gardens.



“ Supporting people and communities with technology



Laura, Romania

Laura first got involved in computing when her Maths teacher set up a computing club. She then started attending a local CoderDojo, where she developed an interest in robotics. In just a few years, Laura has gone from building websites to using advanced technologies to help people and address social problems that she cares about.

She created a prototype for a mind-controlled wheelchair set up a computing club. She then started attending a local CoderDojo, where she developed an interest in robotics. In just a few years, Laura has gone from building websites to using advanced technologies to help people and address social problems that she cares about. She then formed a team with friends in her CoderDojo, and together, they designed and built an autonomous robot that finds and sorts rubbish for recycling, using machine learning.

PROGRAMMES



CODE CLUB

Code Club is a global network of free coding clubs for 9- to 13-year-olds run by volunteers and educators

Young people come to Code Clubs to learn how to create things with technology. Making everything from animations and websites to games and digital art, they grow their confidence with digital technologies, and develop wider skills, such as resilience and collaboration. Code Clubs typically take place in schools and offer a fun, informal space for young people to learn new skills and get creative with technology.

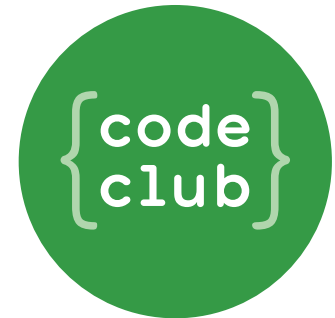
Activities

We provide free training and guidance to educators and volunteers, and match volunteers with schools. We also offer hundreds of free step-by-step projects, which give children ideas and skills to create games, quizzes, animations, and interactive programs using Scratch, HTML/CSS, and Python. These project guides also help adults to support club members, whatever their own experience of programming. We support club leaders to encourage children to get creative with technology, develop

their own ideas, and build projects relating to their interests.

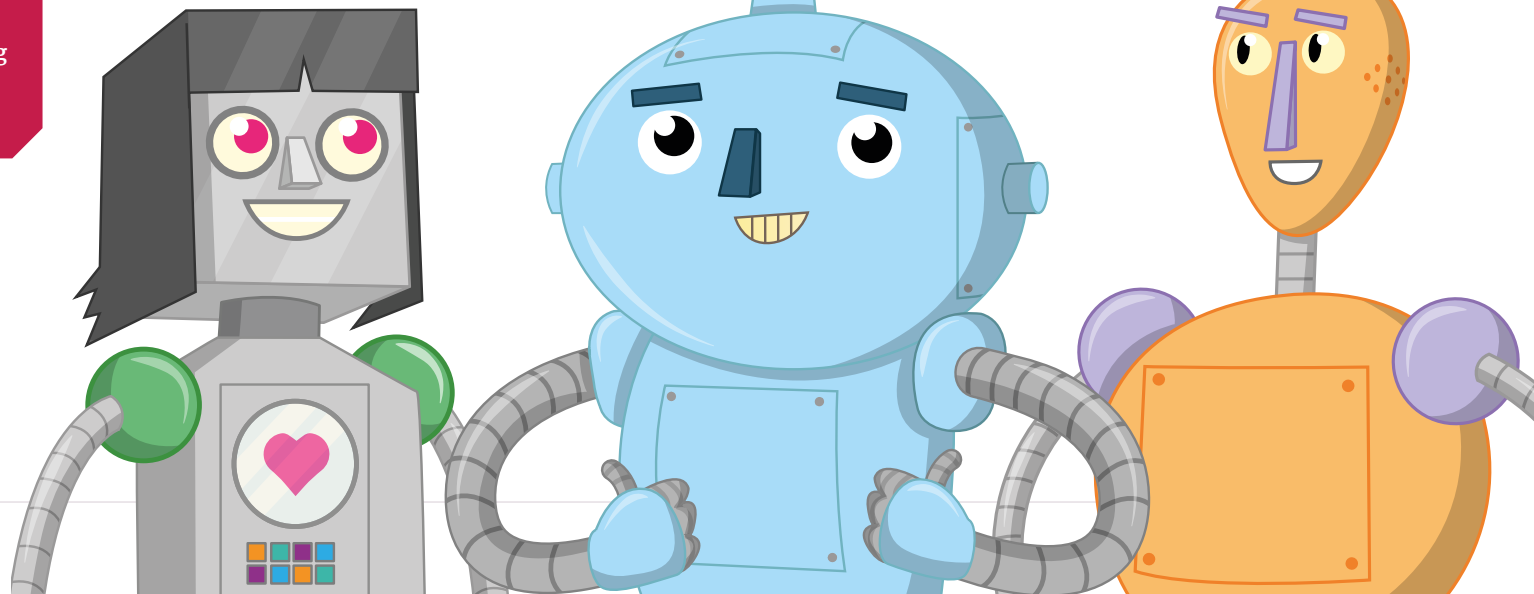
We also work with other organisations across the world to grow and support Code Clubs.

Find out more at:
codeclub.org



WHAT IS CODING?

Children who go to Code Club explain what coding means in our video at rpf.io/whatiscoding





More than
8000 Code Clubs
across the world

160 countries

12,000 volunteers

43% of club members
are girls

92% of volunteers agreed
that the young
people attending Code Clubs have
improved their programming skills



“ This term, we were determined to try robots using the skills we had learned from Code Club projects. We have started to create our own robot, Meriden Robot! ”

Meriden Code Club, UK



Achievements:

- Collaborated with 35 non-profit organisations working in low-resource settings in 30 countries to support them to introduce computing education through Code Club. Groups of people reached by these collaborations have included refugees in Syria and Turkey, students in rural schools in Mexico, and unemployed young people in Benin.
- Collaborated with Pratham Education Foundation to pilot a programme in 40 villages in rural India to start new Code Clubs and train young adults to become these Code Clubs' leaders.
- Joined forces with Aardman Animations, the creators of Wallace & Gromit and Shaun the Sheep, for the 'Shaun the Sheep: Mission to Space' competition, which was open to all registered Code Clubs. To enter the competition, children created a Scratch animation of Shaun and his alien friend Lu-La using our starter project, and remixed it to add their own story and code.

CODERDOJO

CoderDojo is a global community of free, open, and local programming clubs for young people



CoderDojo

Dojos are fun programming clubs for young people aged 7 to 17. They are run by volunteers, who give young people the opportunity to create with code, learn new skills, and collaboratively create solutions to problems that they care about in an informal, social environment.

Activities

CoderDojos run all over the world, with volunteers in 111 countries running Dojos in their communities. Dojos offer a range of activities, and always encourage and support young people to follow their interests, develop their own ideas, and create practical solutions to problems that they care about. Young people learn about computing and programming, but they also develop their skills in teamwork, communication, leadership, and critical thinking.

Find out how to start a Dojo at:
coderdojo.org

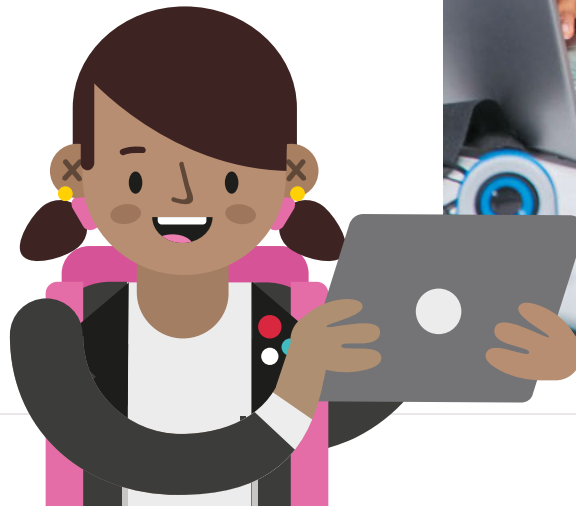
90,000 young people engaged across 2200 active Dojos

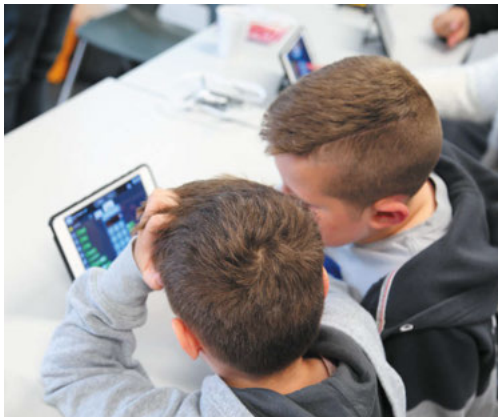
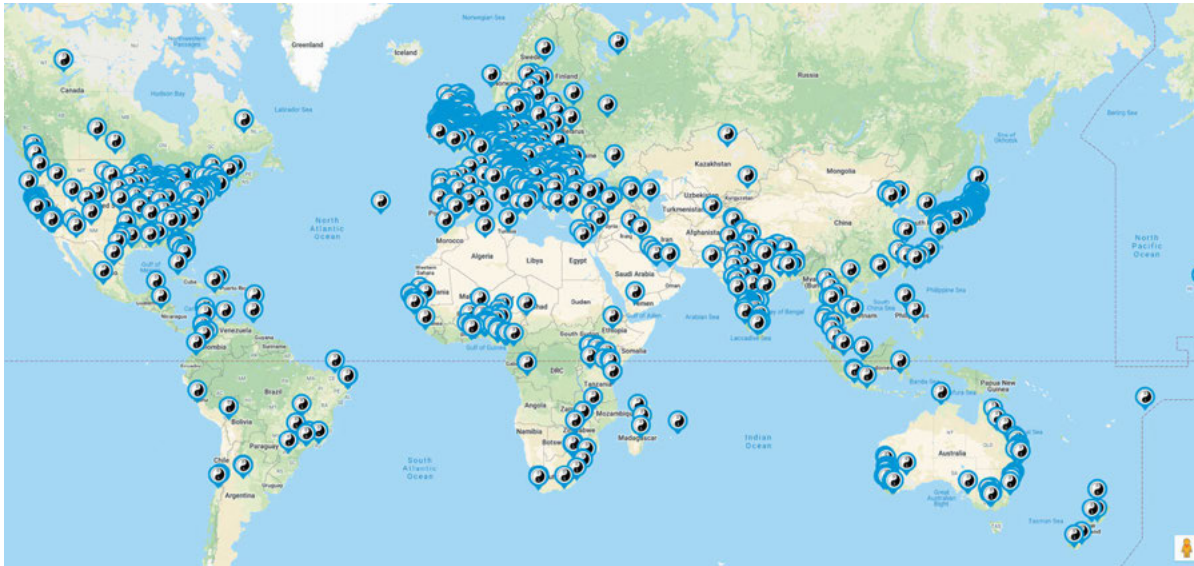
111 countries

10,000 volunteers

33% of participants are girls

92% of volunteers agreed that the young people attending CoderDojos have improved their programming skills





“ CoderDojo provides a fun, informal, and social space. It simultaneously advances programming and soft skills through a unique ethos that brings everyone along in all aspects.

Richard Beattie, CoderDojo champion



Achievements:

- Launched a global Growth Partner programme through which we support non-profit organisations to set up and run CoderDojos in their communities. We now have 10 Growth Partners.
- Our Champions' Handbook was translated from English into a further five languages, to ensure that more adults leading Dojos have advice that is accessible to them in their language.
- Launched our CoderDojo Accessibility Guide, providing advice on making Dojos more accessible for participants with disabilities and/or additional needs.



COOLEST PROJECTS



Coolest Projects brings together young people to showcase the amazing projects that they have created

Coolest Projects is the world's leading technology fair for young people. Participants share their projects with their fellow creators and the public at our flagship events in the UK, the US, and Ireland. Sharing and learning from each other is at the heart of Coolest Projects, with young people exhibiting year on year, creating increasingly advanced projects each time as they learn and develop their skills. Young people win awards for their projects in different categories. It is free to take part in the events and to attend the events, giving more young people the opportunity to be inspired to create with technology.

Activities

We ran three Coolest Projects events in 2019. In early March, Coolest Projects UK took place at The Sharp Project, Manchester; in late March, Coolest Projects USA was held at Discovery Cube Orange County in California; and in May, Coolest Projects International returned to the RDS in Dublin, Ireland. We also supported community-led Coolest Projects events in Belgium, Romania, and Malaysia.

LINKS

- Coolest Projects events: coolestprojects.org
- 'How to create a project' workbook: rpf.io/howtomakeaproject
- Guide for volunteers who want to run a regional Coolest Projects event: rpf.io/howtoruncoolestprojects

“ It's a really good way to see other people's projects and I think it has really helped me get a view of how much is involved with technology. ”

Participant, Coolest Projects International



902 projects showcased across official events

Over **1000** participants in total

90% of participants said that they had improved their programming skills as a result of taking part in Coolest Projects



SCRATCH CONFERENCE EUROPE 2019

We hosted the Scratch Conference Europe for the first time in the UK

The Scratch Conference brings together hundreds of educators to explore the creative ways in which young people are learning with Scratch. The 2019 conference followed the launch of Scratch 3.0, and we were proud to host the conference and welcome members of the Scratch community and Scratch team to Cambridge for three days of workshops and talks.

Activities

The conference brought together 300 educators from around the world to share and discuss the potential of creative approaches to programming for young people. Participants were able to attend talks

and workshops run by people from across the Scratch community, as well as keynote presentations from MIT Media Lab's Mitchel Resnick, co-inventor of Scratch, and closing shows from science presenters Neil Monteiro and Fran Scott.

LINKS

Videos of the conference
keynotes: rpf.io/sce19-keynotes



300 attendees

More than
80 talks and
workshops

THE EUROPEAN ASTRO PI CHALLENGE



Astro Pi gives young people the opportunity to conduct scientific investigations in space by writing programs that are run on the Raspberry Pi computers aboard the International Space Station (ISS)

Astro Pi is an ESA Education project run in collaboration with the Raspberry Pi Foundation. It offers two missions, in which young people write code that is run in space. ESA astronaut Alexander Gerst and CSA astronaut David Saint-Jacques were the Challenge's ambassadors for 2018/19.

Activities:

Mission Zero is a non-competitive mission for young people up to the age of 14. The mission is designed for beginners, who have to write a simple Python program that measures the temperature on the ISS and displays a message on the Astro Pi computers. All eligible entries are guaranteed to be run aboard the ISS.

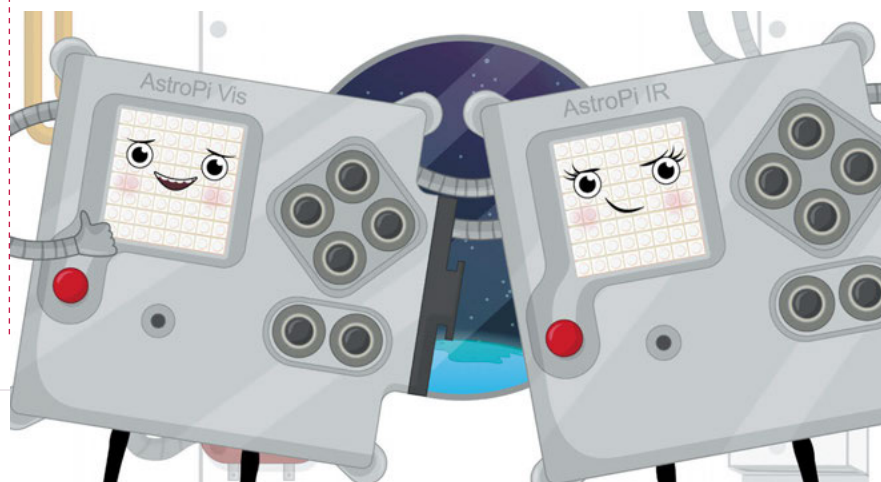
Mission Space Lab is a scientific mission for young people up to the age of 19. Entrants design and program an

experiment that can be run on the Astro Pi hardware, making use of its sensors. The most accomplished projects are run on the Raspberry Pi computers aboard the ISS, and the data is returned to Earth, where teams analyse it and produce

scientific reports of their findings. The ten teams that write the best reports are selected as the Astro Pi Mission Space Lab winners.

Find out more at www.astropi.org

“ Firewatchers from Post CERN HSSIP Group, Portugal, used a machine learning method on their images to identify areas that had recently been affected by wildfires. ”



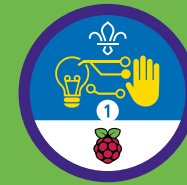
Achievements:

- 4702 teams from 24 countries entered Mission Zero in 2018/19 and had their code run on the International Space Station.
- 135 Mission Space Lab teams from 21 countries had their scientific experiments run on the ISS and received data sent back to Earth.
- In some experiments, sensors were used to measure the conditions on the ISS and even map the magnetic field of Earth. In other experiments, an infrared camera was used to investigate life on Earth, such as vegetation health and the impact of human life on our planet.



SCOUTS

We support the Digital Maker Staged Activity Badge, which gives Scouts in the UK the opportunity to develop their computing and digital making skills



Scouts

We work with the Scout Association in the UK to support their Digital Maker Staged Activity Badge. The badge introduces digital making to young people and adult volunteers. To earn the badge, young people take part in digital making activities that relate to Scouting activities.

to solve real-life local or global problems. We provide fun learning resources and projects to support young people and Scout leaders to work through the stages and meet the requirements to earn the badge.

Find out more about the Digital Maker Staged Activity Badge at rpf.io/scouts-digital-maker



Activities:

In 2019, 25,000 young people earned a Digital Maker Staged Activity Badge. The first stages of the badge involve engaging with uses of digital technology in everyday life, giving instructions to computers, and creating simple programs. Later stages involve using programming and electronic components to create something that could be used in a Scouting activity, and to help others



25,000 young people engaged with our Digital Maker Staged Activity Badge

NATIONAL CITIZEN SERVICE

We ran hackathons to bring digital making to 15- to 17-year-olds, empowering them to use technology to address local, real-life challenges



The National Citizen Service (NCS) works with 15- to 17-year-olds across the UK to challenge, change, engage, and empower them, and to give them confidence and skills for their futures. Young people take part in experiences in adventure, skills, and social action. In 2019, we continued our work with the NCS Trust to deliver two-day social action hackathons in different parts of the UK. Young people collaborated in teams to identify a social issue that they could address with technology, and learnt the digital skills to make this a reality.

participants' reported confidence with computers, with 71% of participants saying that they felt confident with technology after the hackathon, and 18% having changed their mind about technology and become confident over the two days.

“ I had a great time. Thank you so much. I've never liked computers before, but this has definitely changed my mind. ”

Participant, NCS social action hackathon

Activities:

We ran social action hackathons in Brighton, Leicestershire, Middlesbrough, and Stockport in collaboration with NCS local delivery partners and the NCS Trust. The hackathons took place in the summer, and 1200 young people took part. Our hackathons had a positive impact on



DIGITAL LEARNING CONTENT

Millions of people use our free educational resources to learn computing and digital making skills

Our projects site provides a wide range of resources and guides to help people learn computing and digital making skills. Learning through making is at the centre of our approach, and we support people to learn by making projects that they care about. All projects are linked to learning objectives in our Digital Making Curriculum, ensuring that our learning experiences are both fun and meaningful.

Activities:

Our free online projects help people with all levels of experience learn computing and digital making skills through making things that link with their varied interests. We have designed our projects site around pathways to encourage learners to challenge themselves and build their knowledge and skills while completing projects about things that interest them. In 2019, we expanded the number of pathways available to learners, and created new projects to cater for even more interests.

To make the projects accessible to as many people as possible, we work with an amazing community of volunteers to translate them into 27 languages.

Find out more at:
rpf.io/learn



6 million

users learned with
our online projects

256 projects
in total

30 new projects
in 2019
two languages

Projects available in
27 different languages,
with 81 projects
available in at least
two languages





NEW PROJECT PATHWAYS IN 2019

SCRATCH MACHINE LEARNING

Use machine learning to train a computer to detect whether you liked a book or movie from what you say about it, or to guess how your classmates get to school

BLOCKSCAD AND FREECAD

Create 3D objects such as key rings and a travel chess set

WOLFRAM

Use the Wolfram language to make projects such as a crossword solver, a 'face swap' application, and a weather dashboard

CRUMBLE

Use Crumble hardware to create a motor buggy or a fantastic creature with glowing eyes

Creator



Builder



Developer



Maker



SUPPORTING FORMAL EDUCATION NATIONAL CENTRE FOR COMPUTING EDUCATION

We are working as part of a consortium with STEM Learning and BCS, The Chartered Institute for IT to deliver the National Centre for Computing Education (NCCE). The programme is funded by the Department for Education and marks a significant investment in improving the provision of computing education in England.

The NCCE provides high-quality support for the teaching

of computing in schools and colleges, from Key Stage 1 through to A level. Our extensive range of training, resources, and support will cover the full curriculum at every Key Stage, catering for all levels of subject knowledge and experience.

At the Raspberry Pi Foundation, we are creating online resources for teachers and students, and carrying out research into the gender balance in computing lessons.



TEACHING RESOURCES

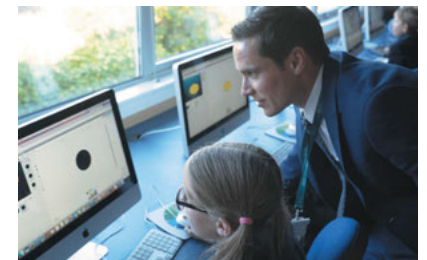
We are producing a comprehensive, lesson-by-lesson computing curriculum for teachers with complete supporting materials

As part of the National Centre for Computing Education, we are creating a collection of more than 500 hours of classroom resources to help teachers with the delivery of the entire computing curriculum from Key Stages 1 to 4 in England (ages 5 to 16). This is designed to reduce teachers' workload, whilst also supporting teachers to improve their subject knowledge and understanding of effective teaching approaches. All content is free, open, and editable (under an Open Government Licence) so that teachers can tailor it to their students and school setting. We've also made sure that the content is suitable for all students regardless of their academic performance, background, and additional needs.

Activities:

In September, we launched the first nine units, developed by experienced primary and secondary computing educators. By July 2020, we will have published 36 units for primary computing, and 33 units for secondary computing, including GCSE Computer Science.

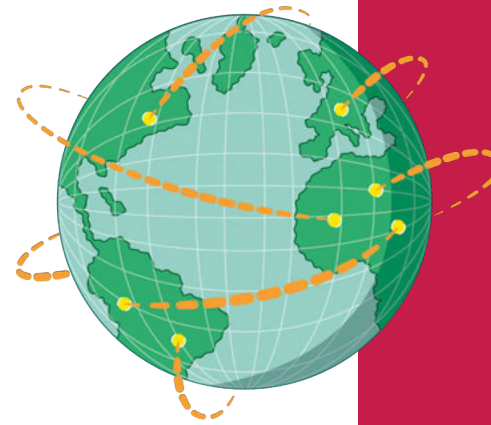
You can find our growing collection of classroom materials at teachcomputing.org/resources



“ Over 500 hours of teaching materials covering the entire computing curriculum ”

ONLINE TRAINING

Our online training courses teach computing and digital making skills to educators and adult learners



Our online training courses help educators develop a wide range of skills, from 'Teaching Programming in Primary Schools' to an 'Introduction to Cybersecurity for Teachers'. They cover subject knowledge and teaching approaches suitable for educating learners at all levels, from beginners in primary schools through to students taking advanced courses. Thanks to support from Google, all of these online training courses are available for free for everyone on the FutureLearn platform.

Activities:

Our online courses are a core component of the Computer Science Accelerator Programme, which is supporting thousands of teachers in England to develop the skills

and confidence to deliver the GCSE Computer Science curriculum.

Our growing selection of online training courses is available for free at raspberrypi.org/training/online. Teachers in England can access online courses and certification at teachcomputing.org

“ Subject knowledge and teaching approaches for supporting learners at all levels ”

Achievements:

■ We've created 15 new courses in 2019, on topics including computer networking and cybersecurity, pedagogy, creating an inclusive classroom, and leading classroom discussions about the impact of technology.

Over **30,000** people participated in our online courses this year

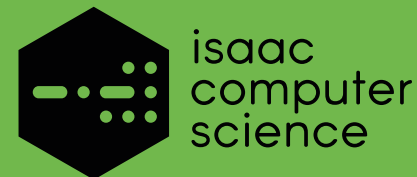
Participating educators estimated they would reach on average **70** young people with what they had learnt

78% of participants agreed that they had improved their computing skills



ISAAC COMPUTER SCIENCE

We launched a free online platform for A level Computer Science students and teachers in collaboration with the University of Cambridge



Isaac Computer Science provides learning resources for young people and educators working on A level Computer Science. It is designed to be used in the classroom, for homework, and for revision, and will cover every topic in the AQA and OCR A level Computer Science specifications. On Isaac Computer Science, students can learn about new topics or revise previous learning, with confidence that all the content is of high quality and is relevant to the A level exams. The platform was built in collaboration with the team at the University of Cambridge that

is behind the successful Isaac Physics platform, and it is informed by their research into online learning.

Activities:

In September 2019, we launched Isaac Computer Science. Alongside providing learning resources online, we are running a programme of face-to-face events to support teachers and students to explore A level Computer Science. Our Teacher CPD events take place in partner universities and provide teachers with focused demonstrations on a

particular topic. Student Booster sessions offer targeted activities related to particular aspects of the A level syllabus, and Masterclasses give students an insight into the applications of computer science in an engaging context, such as developing a heartbeat sensor. The involvement of businesses gives students exposure to the vast variety of career opportunities that a background in computer science can offer.

Try out Isaac Computer Science at isaacomputerscience.org



More than
10,000 registered
users
on the platform

429 students and 126
teachers have
taken part in Isaac Computer
Science events

GENDER BALANCE IN COMPUTING

We are investigating approaches to improve the gender balance in computing education

Many young women don't choose to study computing-related subjects. A variety of factors across primary and secondary education are likely to influence this, including girls feeling like they don't belong in the subject or its community, a lack of sustained encouragement, and a lack of role models in computing when making career choices. This project gives us

the opportunity to work with schools to investigate different approaches to engage girls in computing and to help increase the number of girls who select Computer Science at GCSE and A level. The project is funded by the Department for Education, and we are collaborating with the Behavioural Insights Team, Apps for Good, and Women in Science and Engineering.

Activities:

The first intervention that we are testing launched in September 2019. In the intervention, Code Clubs and schools running the Apps for Good programme are trying new resources to link these non-formal learning experiences with young people's aspirations for formal learning. We worked with schools to develop and test new teaching approaches for computing classrooms, and recruited hundreds of schools to take part in the other approaches that we are trialling in 2020 and beyond.

Find out more about this research programme at rpf.io/gbicsignup



PICADEMY

Training and supporting educators in creative approaches to computing and digital making

Picademy is free, in-person training for educators to build their skills and develop their ideas to support young people to learn creatively with technology. Teachers, educators, and volunteers take part in a series of workshops over two days. They then apply these skills as a team to create their own digital making projects. Workshops are designed to be accessible to beginners, but with potential to stretch more experienced educators through ambitious projects. The skills and ideas that they develop support them to bring creative computing and digital making experiences to the young people that they work with.

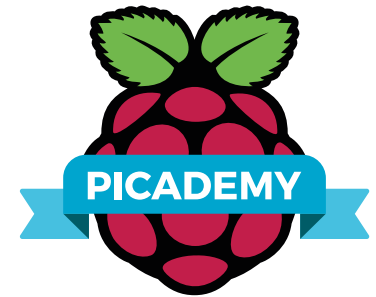
Activities

In 2019, we trained 360 new Raspberry Pi Certified Educators (RCEs) at Picademy events in the UK and North America. We now have 2400 RCEs in our network, including teachers working with learners of all ages, librarians, museum educators, university lecturers, youth workers, and coding club volunteers.

In North America, we supported established RCEs to run Picademy sessions for new people looking

to become part of the community. In the UK, we ran Picademy Bytes events for school teachers across the country, led by Community Trainers. These sessions were 60- to 90-minute workshops that highlighted the value of physical computing in the classroom.

Find out more about Picademy and the Raspberry Pi Certified Educators network at raspberrypi.org/training/picademy



“The friendly and welcoming atmosphere, combined with the support and teachings from presenters and others in your cohort, make this a fantastic and comfortable way of expanding your learning, no matter what your current skill set may be.”

Raspberry Pi Certified Educator



360 new Raspberry Pi Certified Educators in the UK and North America in 2019

2400 Raspberry Pi Certified Educators in our community in total



“

Picademy gave me the confidence to try new things in my classes and to incorporate more physical computing projects.

”

Raspberry Pi Certified Educator

HELLO WORLD

The magazine for computing and digital making educators

Hello World is a free magazine for educators who provide computing and digital making experiences for young people. It includes inspirational projects, the latest news in computing education, lesson plans, and opinion pieces. Hello World is a community magazine, and every issue has contributions from educators and researchers, including practising teachers. The magazine is available for free online for everyone, and UK-based educators can receive a printed copy to their home address free of charge.

Activities:

In 2019, we published issues with a focus on inclusion and diversity, the links between maths and computer science, the connections between computing and the arts, the launch of Scratch 3.0, and the work of the National Centre for Computing Education in England.

Learn more at helloworld.cc



34,000 subscribers

10,000 printed copies of every issue sent to educators for free



RESEARCH & IMPACT

We are working to better understand how young people learn computing and digital making

We rigorously evaluate our own programmes, undertake original research, and collaborate with the computing education research community.

Activities:

We use research and evidence to inform all aspects of the Foundation's work. This includes engaging with academic literature, trialling and testing new approaches, and carefully

evaluating the impact we are having.

In 2019, we focused on developing how we use data to understand how well our programmes are doing, and using academic studies of approaches to teaching and learning to shape our educational resources and training. We published the results of several large surveys that give insights into our communities of CoderDojos, Code Clubs, and Raspberry Pi Certified Educators.

We also developed and trialled new approaches to understanding

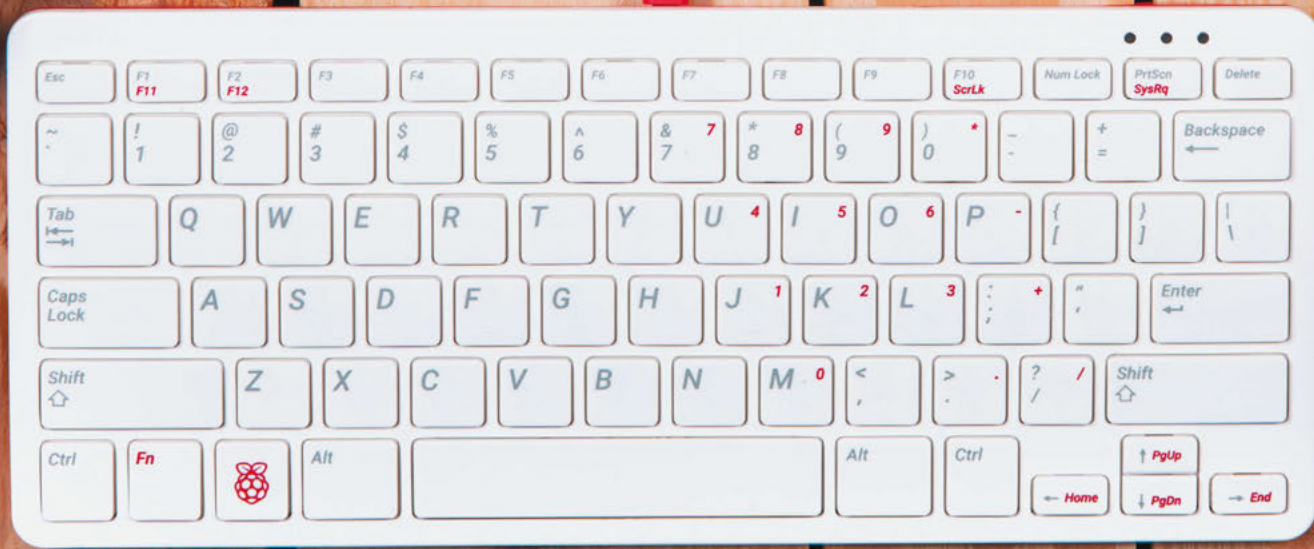
the learning that happens in Code Clubs and CoderDojos, and to recognising what young people have learnt. We trialled an approach using quizzes and badges in clubs, and published both a report and an academic paper on what we found. We also began to explore using showcasing to accredit learning. Both of these trials will inform how we continue to develop our projects and support for clubs.

Download our research reports at rpf.io/research



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COMPUTERS



THE RASPBERRY PI COMPUTER

Raspberry Pi computers are powerful, affordable computers that give people around the world the opportunity to learn about computing and create their own software and physical computing projects.

The Raspberry Pi is a tiny, dual-display, desktop computer that people use in industry, to learn, and to make things that matter to them. It powers digital projects including robot brains, smart home hubs, media centres, factories, and more. Raspberry Pi computers run an open-source operating system that we build and maintain, and we partner with other organisations to provide free access to other powerful educational software and tools.

Activities:

In June 2019, we launched the next-generation Raspberry Pi 4, a comprehensive upgrade to our flagship credit card-sized computer available for \$35. There are now more than 30 million Raspberry Pi computers used by people worldwide to address problems that they care about, or to create commercial products. Raspberry Pi 4 offers roughly three times the performance of the previous generation, with a 1.5GHz quad-core 64-bit ARM Cortex-A72 CPU and 1, 2, or 4GB of LPDDR4 SDRAM. It can also drive two high-resolution monitors, making it a good replacement for a desktop PC.

For the latest computer, we produced a Desktop Kit that contained a Raspberry Pi 4, our mouse and keyboard, our new case and USB-C power supply, and a copy of our Beginner's Guide. The Desktop Kit has everything that beginners need to get started with a Raspberry Pi.

In February, we opened the first official Raspberry Pi Store, in the Grand Arcade in Cambridge, UK. The store is a place to experience and buy Raspberry Pi products. Visitors can explore what they can do with a Raspberry Pi, discover our accessories and books, and get a hold of exclusive merchandise.

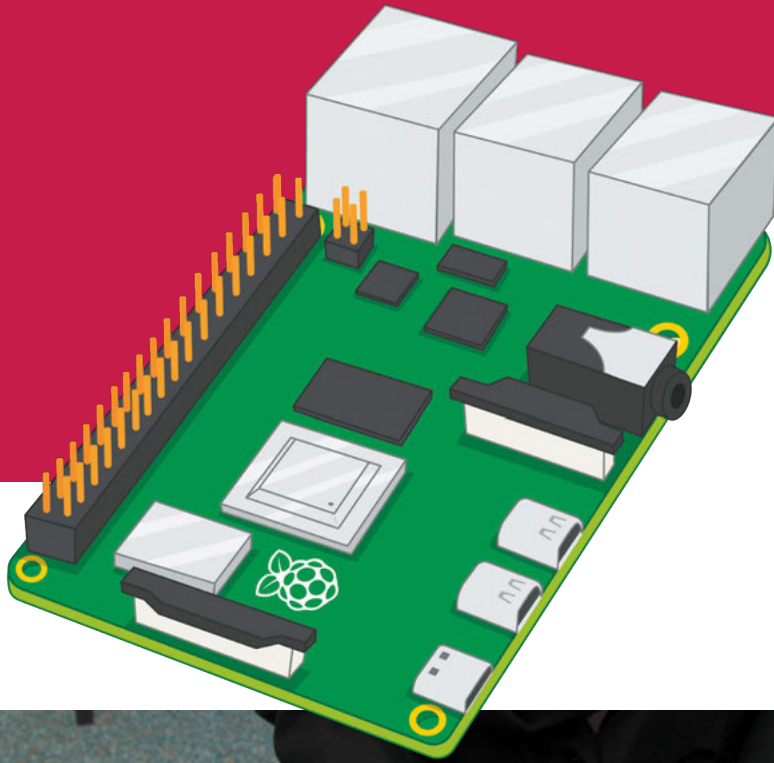
30+ MILLION

Raspberry Pi computers sold by the end of 2019

1.7 MILLION

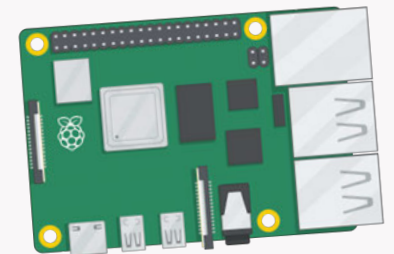
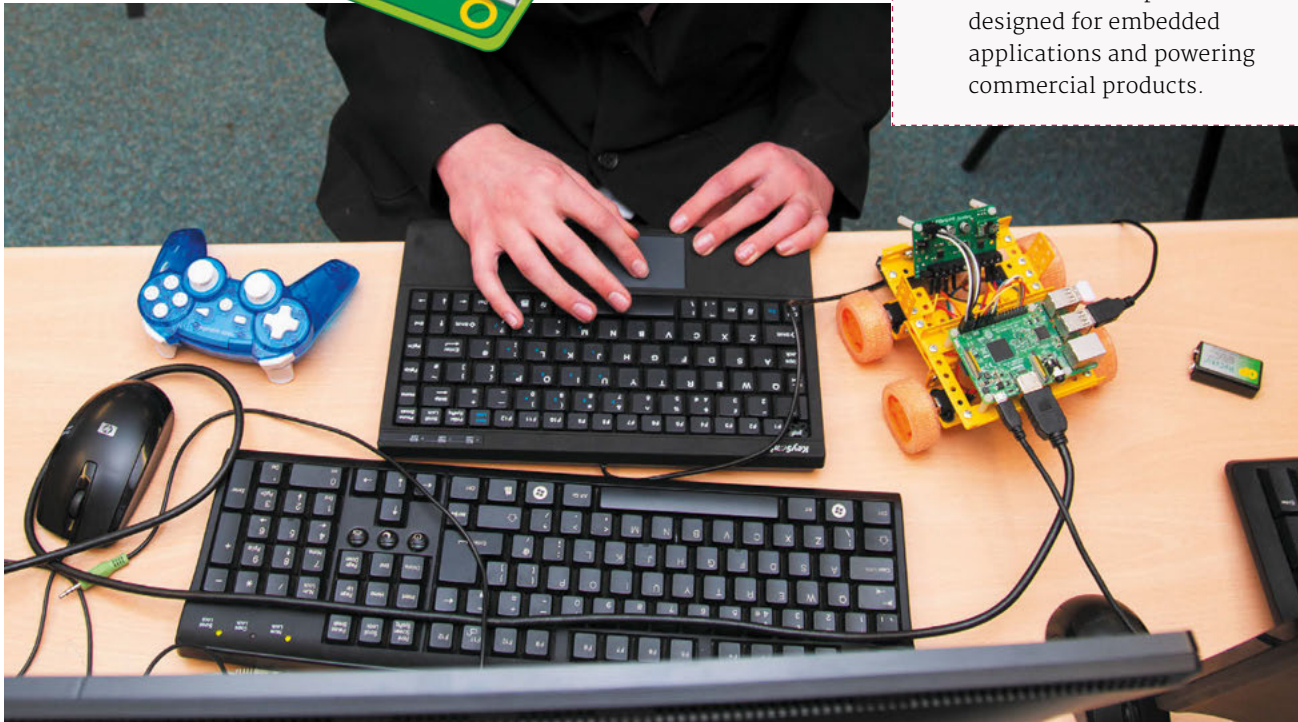
of our most recent Raspberry Pi models sold in 2019 (4B and 3A+)





Achievements:

- Launched Raspberry Pi 4, our next-generation computer with a 1.5GHz quad-core CPU, 1, 2 or 4GB of RAM, full-throughput Gigabit Ethernet, two USB 3.0 and two USB 2.0 ports, and dual-monitor support.
- Launched the Compute Module 3+, bringing the power of the Raspberry Pi 3 Model B+ to our small form factor computer designed for embedded applications and powering commercial products.
- Opened the Raspberry Pi Store in Cambridge, UK.
- Released Raspbian Buster, the latest version of Debian Linux, for all Raspberry Pi computers. We included a new appearance for the desktop and graphical user interface, with simplified interface elements and a cleaner, more modern design. We also made Thonny the default Python editor.
- Worked with the Scratch team to create an offline version of Scratch 3.0 for Raspberry Pi. This enables users in educational settings without an internet connection to benefit from the latest features of Scratch, and includes extensions with Scratch blocks for the GPIO pins, simple electronics, and our Sense HAT add-on.



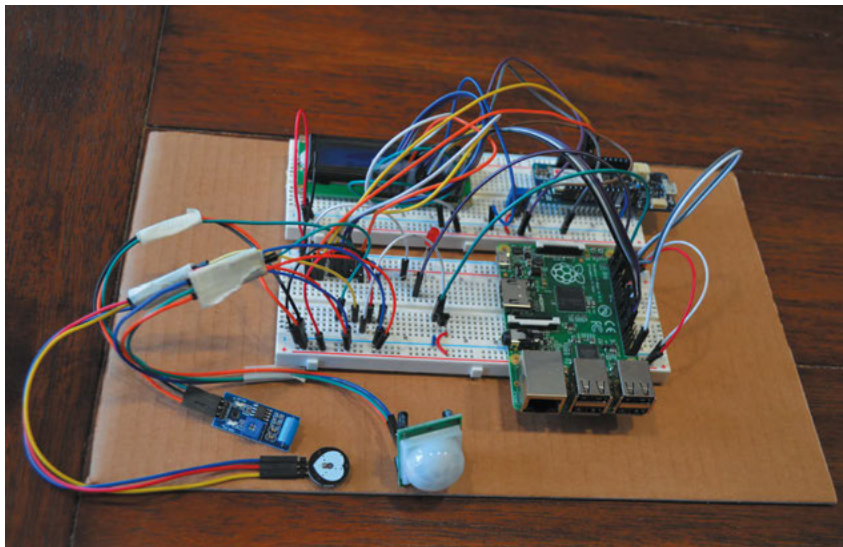
RASPBERRY PI POWERED PROJECTS

Firefighter monitoring system

Teenager Parisa Khashayar has been learning how to code since the sixth grade. She found out that while firefighters regularly risk their lives for the public, they don't have a system to monitor their health when they are working. She created a wearable device that monitors

the surrounding conditions and the firefighter's health and relays this to the command center. Parisa showcased the system at Coolest Projects USA and was awarded joint first place in the Hardware category.

Read more at rpf.io/cp-fire



Snail habitats

Teacher Mrs Nation's class created habitats for snails as part of their studies. Keeping an eye on the snails and making sure that they were being looked after was an important part of the project, but checking on the snails regularly disturbed their habitats. STEM mentor Misty Lackey worked with the class to set up monitoring systems using Raspberry Pi computers and Camera Modules.

Photos were taken every hour and uploaded to a dedicated snail monitoring website so that the children could check on their snails without bothering them. The code for the project is shared on GitHub so anyone can use it to create their own animal monitoring system.

**Read more at rpf.io/snails
See snail habitat photos at snailhabitat.com**



Driverless cars run by Raspberry Pi

Undergraduates at the University of Cambridge have built a scale-model simulation of a fleet of driverless cars powered by Raspberry Pi computers. They are using them to explore how driverless technology can reduce accidents on the roads. They found that communication between cars can help to regulate the flow of traffic, and prevent build-ups when there are obstacles in the road, such as a stalled car. This communication allowed cars to cooperate to keep the traffic moving by changing lanes early, and allowing each other to do so. The undergraduates wrote an academic paper on the subject, which was accepted to the International Conference on Robotics and Automation (ICRA 2019) in Montréal, Canada.

Read more at rpf.io/driverless



Stonehenge Skyscape

Stonehenge currently attracts more than 1.5 million visitors each year. Worries about potential damage have forced preservationists to limit visitors' access to the stones themselves. However, Eric Winbolt, Interim Head of Digital/Innovation at English Heritage and developers at The Bespoke Pixel discovered that they could create a near real-time view of the stones for visitors online, by taking a separate hemispherical snapshot of the sky from a nearby position and merging it with a photograph of the stones. They used an upwards-pointing fish-eye lens camera connected to a Raspberry Pi 3 Model A+ computer,

taking images once every four minutes. This Raspberry Pi was also fitted with a Pimoroni Enviro pHAT, and captured light values from the sky image are used to alter the colour values of the image of the stones so that the light on Stonehenge, as seen via the web, reflects the ambient light of the sky. This gives a real-time view of the stones as they look at any time, with a mixture of live and pre-recorded images. The results are live on the English Heritage website.

Read more at rpf.io/stonehenge
View the skyscape at stonehengesky scape.co.uk



RASPBERRY PI PRESS

Raspberry Pi Press produces publications that support the community by showcasing projects, sharing ideas, and helping people learn from each other.

Our magazines and books provide dedicated resources, projects, and news catering for anyone who likes to make and create using digital technologies. We currently publish six magazines, covering topics such as education, making, game design, computer technology, and photography.

In 2019, we also published a range of books for makers, photographers, and Raspberry Pi enthusiasts.

Most of our magazines and books are all published under a Creative Commons licence (CC BY-NC-SA 3.0) and made available online as free PDFs so that they are accessible to everyone. This means that readers are welcome to share and adapt the content of our books and magazines, as long as they follow the terms of the licence.



Around
200,000 people downloaded our
magazines every month

Almost
10,000 subscribers to our magazines
by the end of 2019

Our magazines

Wireframe

Lifting the lid on video games
wfmag.cc



Hello World

Computing and digital making for educators
helloworld.cc



HackSpace magazine

Projects and technology for makers
hsmag.cc



The MagPi

Raspberry Pi and maker projects
magpi.cc



Custom PC

PC hardware, overclocking, gaming, and modding - custompc.co.uk



Digital SLR Photography

Techniques, images, and reviews for photographers - digitalslrphoto.com



GOVERNANCE & PARTNERSHIPS

BECOME A SUPPORTER

The work of the Raspberry Pi Foundation is only possible because we are part of an amazing community of people and organisations who share our mission and who give their time, expertise, and resources to bring it to life.

How to become a supporter	Examples
<p>Donate Whether you are an individual or an organisation, every pound, dollar, and euro you trust us with makes a huge difference. If you or your organisation would like to make a donation to support our mission, or if you are interested in learning about sponsorship opportunities for our flagship events, email us at partners@raspberrypi.org or visit rpf.io/donate.</p>	<p>In 2019, the Atlassian Foundation donated £200,000 to the Raspberry Pi Foundation to support our international growth and translation efforts so that we could reach more young people around the world.</p>
<p>Fundraise From holding auctions and Maker Days to running marathons, organisations and individuals fundraise for us in lots of creative ways.</p> <p>If you would like to fundraise for us, you could set up a JustGiving or GlobalGiving web page, and donate the proceeds of your fundraising activities.</p> <p>If you would like to talk to us about your fundraising plans, email us at partners@raspberrypi.org.</p>	<p>In 2019, Intercom donated the proceeds from ticket sales to their Building Intercom events to support CoderDojo.</p> <p>“All of us at Intercom would have loved the opportunity to attend CoderDojo as kids. We are excited about the opportunities and adventures CoderDojo has and will continue to open up for millions of kids, helping them find passion, build friendships, and grow skills that enable them to solve problems and create wonderful things with technology. Intercom is proud to support this amazing work.” – Darragh Curran, VP Engineering, Intercom</p>
<p>Volunteer Tens of thousands of volunteers support our programmes around the world. To find a volunteering opportunity near you, check out our website: www.raspberrypi.org/volunteer</p>	<p>In 2019, Accenture grew its network of employee-led Dojos to over 30 clubs across Ireland, India, Mexico, Chile, Brazil, Colombia, South Africa, and the United States.</p> <p>“Accenture has developed a fantastic relationship with CoderDojo over the past few years, aligning with our Corporate Citizenship aim to equip young people with digital skills.” – Julie Spillane, MD, Accenture</p>

OPENET FLAGSHIP EVENT PARTNERSHIP

Funding period: **2013 - present** Total funding: **€100,000+** Impact: **1100 young people**

Openet was founded in 1999 by Joe Hogan. It is one of Ireland’s largest indigenous software companies, at the forefront of telecoms software development. A computer scientist by background, Joe understands the importance for young people to move away from being passive consumers of software with only basic coding skills. He has been involved in CoderDojo since the early days, attending his local Dojo with his daughter Ciara. He was eager to get his company involved in Coolest Projects, the world’s leading technology showcase for young people. Openet became one of the first corporate sponsors of Coolest Projects in 2014, and has continued to be a central contributor to the event ever since.

In 2015, Joe Hogan and Openet built on their support, creating what is now a yearly highlight of Coolest Projects International: the Openet Innovator stage. One of the key skills nurtured in Code Clubs and CoderDojos is the presentation of ideas, as much as the

coding and development of them. The Openet Innovator stage gives young digital makers the chance to pitch their ideas to the crowd, develop their skills, and win prizes in recognition of their pitches.

In 2020, the Openet Innovator Stage will return to Coolest Projects for the fifth year.

“Through our support of Coolest Projects, we wanted to celebrate the process of innovation. We have proudly sponsored the innovation stage, which provides a platform for young people to get the experience of presenting their ideas clearly to a potential audience of ‘investors’.” – **Joe Hogan, CTO and Founder, Openet**



GOVERNANCE

The Raspberry Pi Foundation is a UK-registered charity (1129409), formed as a company limited by guarantee

The Foundation is governed by our Board of Trustees, who are responsible for making sure that we use our resources well to achieve our charitable goals. Trustees give their time freely as volunteers to support our work.

A wider group of Members supports the work of the Trustees. Members are individuals with expertise in areas related to our mission, and they volunteer their time as well. Members advocate for our mission, contribute to our strategy, and hold the Foundation to account. The Membership also elects new Trustees.

Pete Lomas, one of our Founding Members, stepped down as Trustee at our Annual General Meeting in October 2019. Pete has made a significant contribution to the work of the Foundation over many years, and we would like to thank him for his work. Kim Shillinglaw and Richard Clegg were elected by Members to the Board of Trustees at the same meeting.

Trustees

- **David Cleavelly** Co-founder, Cambridge Angels
- **Chris Mairs** Venture Partner, Entrepreneur First
- **Caroline Brown** Independent Director and Chair
- **Jon Drori**, Author and former Chair, Ravensbourne University
- **Kim Shillinglaw** Director of Factual, Endemol Shine UK
- **Richard Clegg** Managing Director, Lloyd's Register Foundation
- **Sherry Coutu** Serial Entrepreneur, Investor, Advisor
- **Tilly Blyth** Head of Collections and Principal Curator, Science Museum

Members

- **Alan Mycroft** Professor of Computing, University of Cambridge (Founding Member)
- **Andy Rice** Senior Lecturer, University of Cambridge Computer Science Lab

- **Annika Small** Co-founder, CAST; Trustee, John Ellerman Foundation and Access Foundation
- **Bill Liao** Co-founder, CoderDojo; General Partner, SOSV
- **Clare Sutcliffe** Co-founder, Code Club; Co-founder, She Wins
- **David Braben** CEO, Frontier Developments (Founding Member)
- **David Willetts** President, Advisory Council and Intergenerational Centre, Resolution Foundation; Visiting Professor, King's College London; member of the House of Lords
- **Eben Upton** CEO, Raspberry Pi Trading Ltd (Founding Member)
- **Ian Livingstone** Non-executive Chairman, Sumo Group plc; Co-founding Partner, Hiro Capital
- **James Whelton** Co-founder, CoderDojo
- **Jim Knight** Chief Education and External Officer, Tes Global; member of the House of Lords
- **Limor Fried** Founder and Engineer, Adafruit Industries
- **Martha Lane Fox** Founder and Executive Chair, doteveryone; member of the House of Lords
- **Matthew Postgate** Chief Technology and Product Officer, BBC
- **Miles Berry** Principal Lecturer for Computing Education, University of Roehampton
- **Pete Lomas** Director of Engineering, Norcott Technologies (Founding Member)
- **Rosemary Francis** Founder and CEO, Ellexus
- **Rosemary Leith** Co-founder, World Wide Web Foundation
- **Scott McGregor** former President and CEO, Broadcom Corporation
- **Simon Peyton Jones** Principal Researcher, Microsoft Research; Chair, Computing At School
- **Tim Peake** British astronaut, European Space Agency

PARTNERS & SUPPORTERS

The work of the Raspberry Pi Foundation is made possible by the amazing and growing community that supports our mission. This community includes a wide range of individuals and organisations that provide funding, donate their time and expertise, offer discounts, or lend in-kind support.

We would like to thank the following individuals and organisations for their support of the Raspberry Pi Foundation, Code Club, and the CoderDojo Foundation.

In-kind support

3CX, Adobe, Amazon Web Services, Bytemark, DocuSign, Dropbox, Freshworks, GitHub, Heroku, LearnUpon, Mailchimp, monday.com, phpList Ltd, Proofpoint, RealVNC Ltd, salesforce.com, Sketch, Slack Technologies, Spanning Cloud Apps, Webroot, Wolfram Research, Zapier, Zendesk

£1 million and above

- Google

£500,000 - £1 million

- Microsoft
- Riot Games

£250,000 - £499,999

- Atlassian Foundation
- Expo 2020 Dubai
- Kevin Abosch/GIFTO (Forever Rose)
- The Shell Centenary Scholarship Fund

£100,000 - £249,999

- BNY Mellon
- Dogpatch Labs
- Oracle

£50,000 - £99,999

- Blizzard Entertainment
- Broadcom Foundation
- Mythic Beasts Ltd
- Workday Foundation

£30,000 - £49,999

- Facebook
- Liberty Global
- LogMeIn
- Norcott Technologies
- Openet



Support our work today

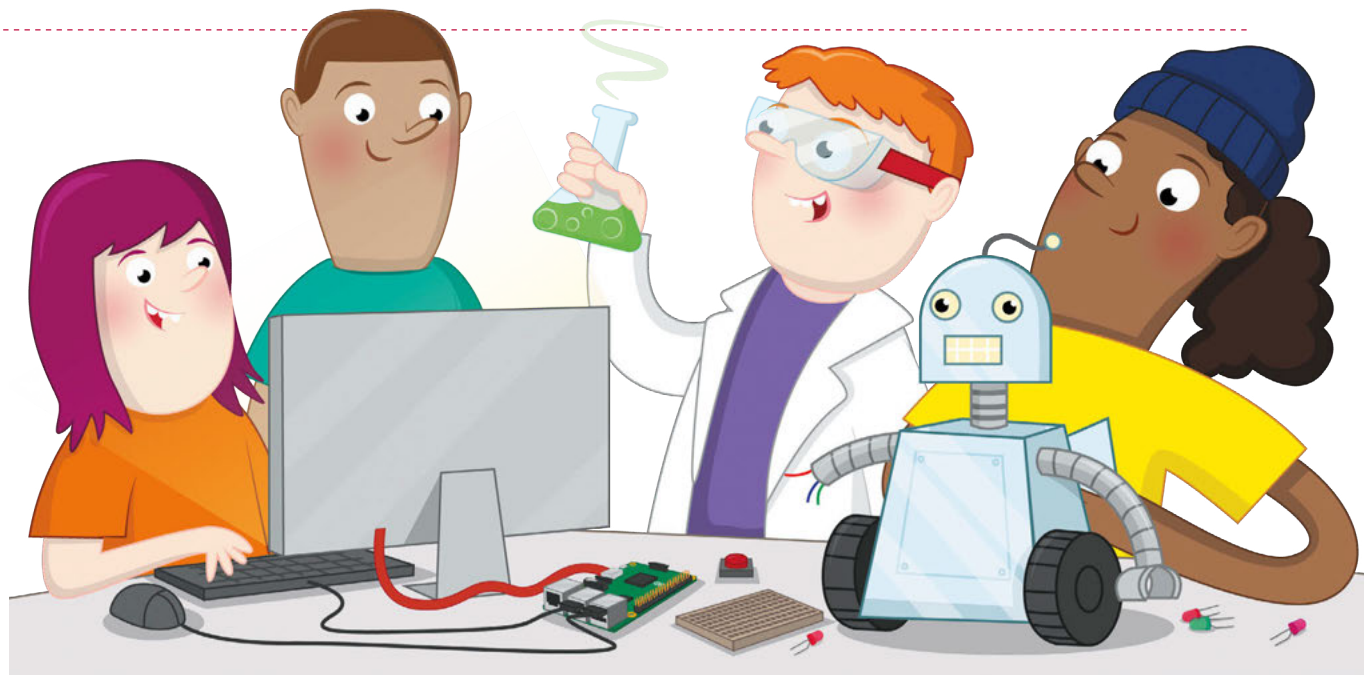
If you or your organisation would like to make a donation towards our work, you can do so on our website at raspberrypi.org/donate. If you would like to discuss how you can become a partner and support our work, please email partners@raspberrypi.org for more information.

FINANCIAL INFORMATION

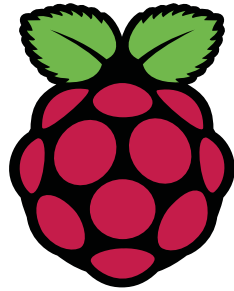
The work of the Raspberry Pi Foundation is funded through a combination of the profits from the sales of Raspberry Pi computers, grants for educational services, and grants and donations from individuals and organisations who support our mission.

As the Raspberry Pi Foundation is a charity, our annual Trustees' Report and financial statements are publicly available on our website.

Find the most recent and historical reports at [raspberrypi.org/about](https://www.raspberrypi.org/about)



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raspberrypi.org

Raspberry Pi Foundation

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