



National Cyber
Security Centre
a part of GCHQ

This is a
CyberFirst
world.

Annual Highlight
Report **2019-20**



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The National Cyber Security Centre (NCSC) was created in 2016 as part of the Government's five-year National Cyber Security Strategy. Since then, our goal has been to make the UK the safest place to live and work online.

The NCSC strives to identify new ways to build the UK's talent pipeline, promote innovation, and develop the UK's cyber security research. Our investment in skills helps the UK remain a world leader in cyber security by developing the talent we have and attracting the best and brightest people to the industry. To ensure a secure, resilient and prosperous economy, organisations must have access to the cyber security skills they need, which is why the NCSC is working closely with the Department for Digital, Culture, Media and Sport (DCMS) to close the cyber skills gap.

Welcome to the CyberFirst Annual Highlight Report for April 2019 – March 2020. At the time of writing, the UK – alongside much of the world – is enduring the trials of isolation, and in far too many cases, the pain of losing loved ones. The Covid-19 pandemic has quite literally caused the world to pause, take a deep breath and think about how to move on. It's fair to say that the society we were living in won't be the same society into which we emerge in a few months' time.

One of the most striking impacts of the current crisis is the rapid switch to online services to keep our society and the economy connected. Companies are rethinking the need for large offices, and remote working is starting to feel like the new norm. Secure online business and video conferencing tools have suddenly become essential to work and family life, all of which reinforces the need for the UK to invest in developing our young cyber security talent.

If I look back over the last 12 months of CyberFirst, I do so with enormous pride. We have all come a long way from when we concluded the pilot in 2016 and committed to a full programme of CyberFirst activity. Now four full years in and at the end of the National Cyber Security Programme, we have over 130 industry, government and academic members of the CyberFirst community, over 900 hand-picked CyberFirst Bursary students, and engaged with 43,238 students through the CyberFirst courses and Girls' Competition. In this short period, CyberFirst has established itself as the UK Government's flagship cyber security development programme, and is viewed with great interest from our allies around the world.

The CyberFirst team have always looked at ways to improve their offering and this year has been no different. We have introduced the CyberFirst Trailblazers course for 11-12 year-olds which feeds into the existing CyberFirst Adventurers course for 13-14 year-olds, and the real highlight for me was the introduction of the Girls' Competition semi-final round. This saw industry and government members of CyberFirst contribute over a hundred new challenges and provide 18 venues for the competition – ensuring every country and region of the UK was represented in the final.

I said in last year's report that I felt the CyberFirst community is something really quite special in its construct and philanthropy. I stand by this as it continues to play an increasingly important role in developing our young talent, and helping to make the UK one of the safest places to live and work online.

Chris Ensor
National Cyber Security Centre
 Cyber Growth



CyberFirst Trailblazers and Adventurers

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The introduction of the CyberFirst Trailblazers course for 11-12 year-olds allowed us to provide a stepping stone to the CyberFirst Adventurers course for 13-14 year-olds. Each course was shortened to a half day, and we attempted to target areas of the country where students wouldn't normally be expected to attend.

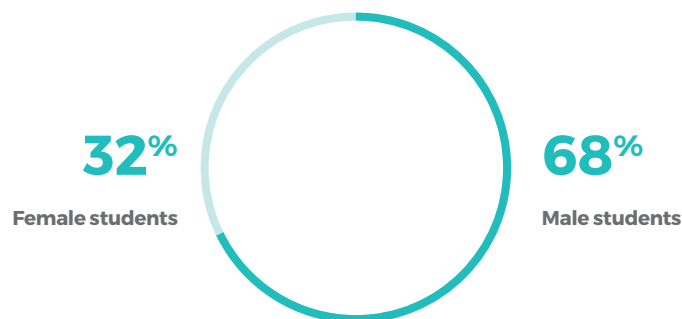
This was a tough thing to do and the numbers in certain locations weren't always what we had hoped for, so we will certainly have a think about some of the lessons we have learnt and how a greater tie-in with regional universities, schools and companies may help.

One of the most encouraging aspects was the support we received from our Bursary students, who were willing to give up their weekends and travel the country to help facilitate and inspire the younger students.



"It was very fun and exciting and it taught me a lot."

Student aged 12 - Cardiff Metropolitan University



Trailblazers and Adventurers Map



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CyberFirst Defenders

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The CyberFirst Defenders courses proved as popular as ever, with 316 students taking up a place. A further 406 girls attended following the CyberFirst Girls' Competition.

The CyberFirst Defenders courses are aimed at 14-15 year-olds and run over five days. The courses were a mix of residential and non-residential, and provided a valuable introduction to all the tools, knowledge and skills they need to build and protect small networks and personal devices.

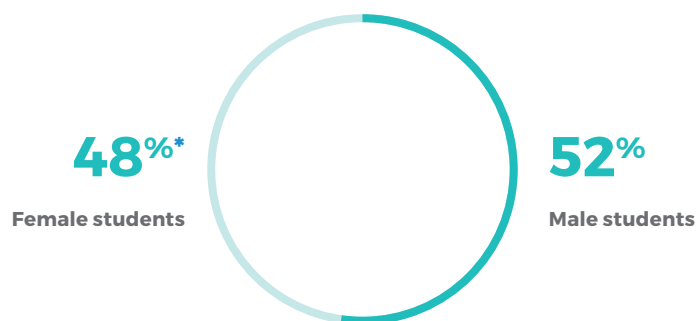
In particular, the students had the opportunity to learn about:

- **Cyber security threats**
- **Defining and applying first line cyber defences**
- **Constructing, configuring and securing a home network**
- **Managing and securing personal digital footprints**



“The whole experience was incredible, doing this course has really made me feel confident in a future career in Cyber.”

Defenders student – Southampton



This learning programme has been SCQF credit rated by **SQA**

*Exclusive of Girls' Competition participants

CyberFirst Futures

Aimed at 15-16 year-olds, and running over five days, the courses introduced 330 students to the more fundamental challenges faced by commercial and non-commercial organisations.

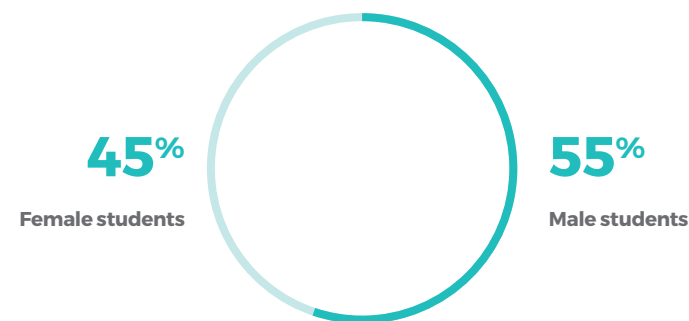
In particular, the students had the opportunity to learn about:

- **Motivations for attack**
- **Protecting yourself from attack**
- **Understanding networks**
- **Protecting a network from attack**
- **Understanding how to make online resources available and secure**



“The whole course has been invaluable all round because it has given me further knowledge about cyber security that I can use in the future.”

Futures student – Newcastle

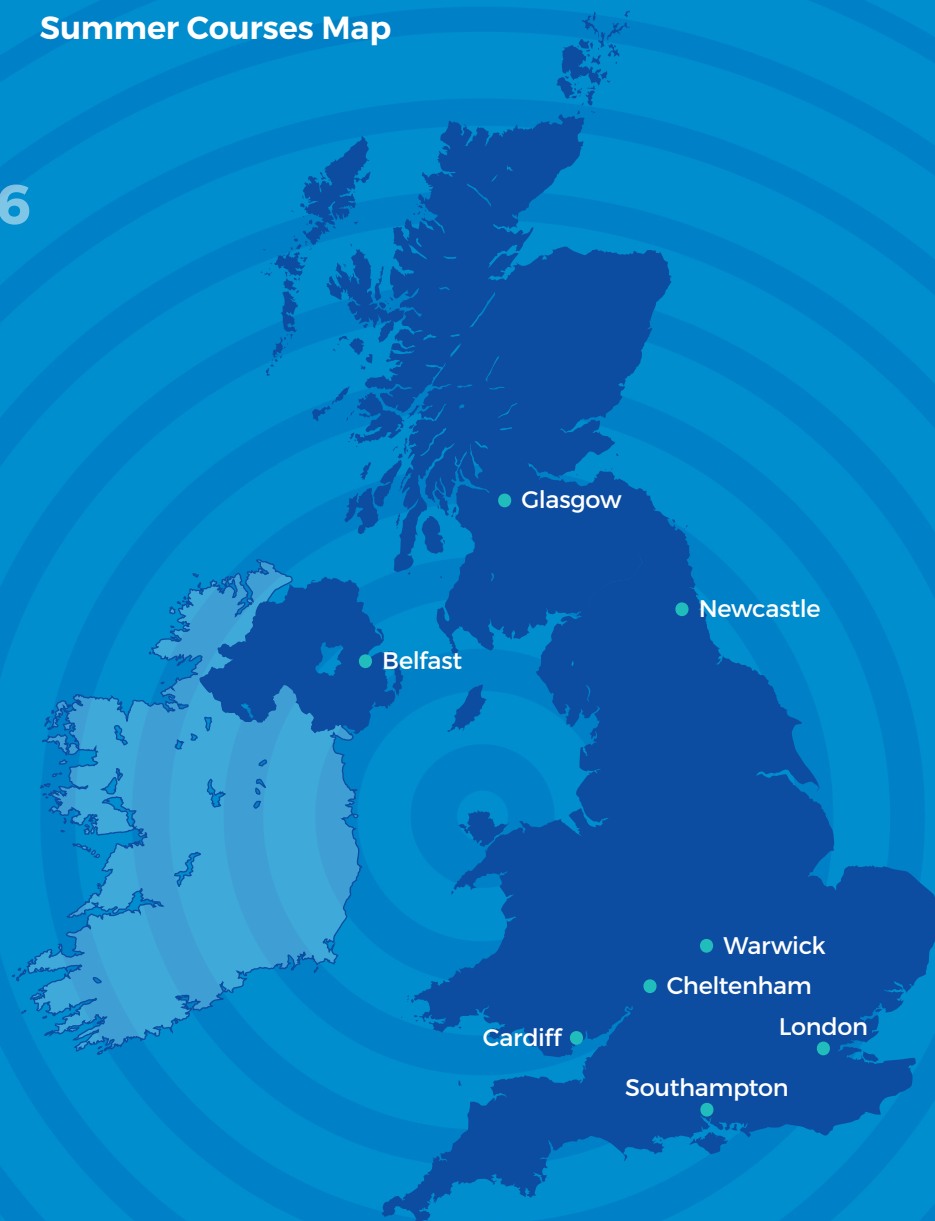


This learning programme has been SCQF credit rated by **SQA**

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Summer Courses Map

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CyberFirst Advanced

In summer 2019, a total of 379 UK students aged 16-17 years and about to enter their final A Level year attended our CyberFirst Advanced courses. These courses are designed to expand the knowledge of anyone studying computer science at A Level, or any student who has a real interest and aptitude for computers.

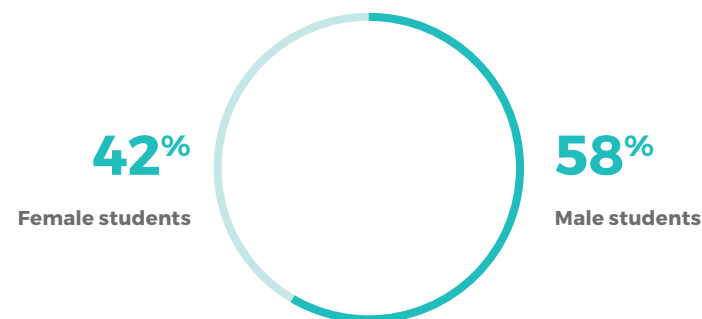
In particular, the students had the opportunity to learn about:

- Digital forensics
- Understanding encryption technologies
- Using open source intelligence techniques
- Penetration Testing



"I loved it, enjoyed every section and found it all incredibly interesting and useful."

Advanced student - Cheltenham



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This learning programme has been SCQF credit rated by **SQA**

CyberFirst Girls' Competition

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Having started off as a bit of an experiment, the CyberFirst Girls' Competition has become a key fixture of the school calendar with many schools returning year after year.

Now in its fourth year, the competition was once again a team event, with each made up of four female students in Year 8 in England and Wales, S2 in Scotland and Year 9 in Northern Ireland.

This year the competition had a major change in its format by including a semi-final round, where the top teams from each of the Home Nations and the English Regions competed simultaneously at 18 venues across the country. This was an extraordinary feat of planning and logistics, and our thanks go out to all those CyberFirst companies, universities and government organisations that helped make the day run so smoothly.

The online round attracted 11,900 girls, which is an increase on participation in 2019. On Saturday 8 February, 154 high performing teams competed in the semi-finals, and from these, the top ten teams from the UK attended the Grand Final in Cardiff on 15th & 16th March.

At the Grand Final, the girls and teachers were able to press their own coins at the Royal Mint. Later that evening, they were greeted by Shenkin IV and the Goat Major of the 3rd Battalion, The Royal Welsh, followed by a heart thumping drum display and a wonderful dinner in the incredible surroundings of Cardiff Castle.



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The top ten teams that made it through to the final in Cardiff were:

- **Beverley High School, East Riding of Yorkshire**
- **Greenwood Academy, North Ayrshire, Scotland**
- **Herschel Grammar School, Berkshire**
- **King Edward's School, Somerset**
- **Loughborough High School, Leicestershire**
- **Strathearn School, Belfast, Northern Ireland**
- **Stretford Grammar School, Greater Manchester**
- **The Castle School, Somerset**
- **The Cathedral School, Cardiff, Wales**
- **The Tiffin Girls' School, Surrey**

With the champions being,

King Edward's School, Somerset



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CyberFirst Bursary 2019

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The CyberFirst Bursary scheme continues to go from strength to strength, attracting highly motivated and very talented undergraduates. With 56 students already graduated and in full time cyber security roles, we currently have 595 hand-picked students on the scheme. This March, we have offered a further 180 Bursaries and if they all accept and achieve conditional results, the Bursary scheme will have 939 students who are either within the scheme or have been through it – taking us tantalisingly close to our target of having 1,000 students through or in the system by 2020.

In September 2019, all 43 CyberFirst graduates accepted positions with GCHQ or industry members, and in the summer of 2020 a further 123 will graduate – with 77 already having received excellent job offers from members of CyberFirst. In 2021 the numbers continue to ramp up and we will have ~230 students graduating and seeking employment within the CyberFirst community.

The CyberFirst Academy welcomed 120 Bursary students throughout the summer of 2019. Students were split between our sites in Scarborough and Cheltenham. Once again, the Academy proved to be a hugely informative and stimulating environment for the students. In addition, we successfully placed 212 students on eight-week summer placements with industry and government, and prior to Covid-19, we had already secured ~440 placement offers for the summer 2020 cohort. This has now been superseded by events, however through the use of home learning and amazing support from the host community, we are continuing to expect to provide a summer activity/placement for all students on scheme.

The number of females successfully joining the CyberFirst Bursary scheme has risen from 24% in 2018 to 27% in 2019. This figure continues to increase and we hope that these exceptionally talented young women will prove to be the female role models that the cyber security industry so desperately needs.

CyberFirst Student Awards



Best Industry summer placement 2019

Jasmin R – Microsoft

“Jasmin has set a high bar for CyberFirst placements. Everybody, including the Vice President of Cybersecurity, has been impressed with her focus, maturity and commitment. She was a role model and leader. She produced and presented a slide pack on Cloud Security which Microsoft will continue to use as the experts in this field have found it a very useful basis for articulating security...we would be keen to work with Jasmin again in the future”.



Best Gov summer placement 2019

Luke W – Department for Education

“Luke made an excellent contribution to the team and I was very impressed with his technical knowledge. We asked Luke to reproduce a dashboard within our SIEM toolset and envisaged this would take 2-3 weeks. To our surprise, he produced a tool that mirrored a commercial tool we currently use within a couple of days. A very impressive delivery and exceeded our requirements...I would not hesitate to ask him to join my team”.



Best bursary giveback 2019

Jack T – TechExp



Best bursary student scheme all-rounder 2019

Sam J – TechExp



Best Bursary student Graduate All-Rounder

Luke W



Best Academy student North 2019

Ethan T



Best Academy student South 2019

Fraser M1

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CyberFirst Community 100 and counting

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CyberFirst is very much a programme that is built on a partnership between industry, OGDs and academia. Without their continued support and help the programme would not have flourished as well as it has to date. So, it was a huge achievement this month to hit our 100th industry sign-up!

Each industry member adds something different to the programme; the majority offer student summer placements but some simply support us with speakers at our events, use their social media and PR channels to amplify our messages, and some offer up their venues for our students to use.

Of particular note are those organisations that wrote over a hundred challenges for the CyberFirst Girls' Competition semi-final, and simultaneously hosted 154 teams at 18 locations right across the UK. That remains a wonderful example of the CyberFirst community coming together; the NCSC working in tandem with our industry, academic and government members to provide a truly memorable experience for hundreds of very talented young girls.



“If there ever was a win-win scenario, CyberFirst shows the way.”



“It’s a super programme enabling business to partner with a new generation of talented individuals. I can’t speak highly enough of this programme.”

CyberFirst Industry and Government Awards

For those who have been part of the CyberFirst community over a number of years, you will know that we like to publicly recognise the fantastic contributions our CyberFirst members make to the programme with a formal dinner and awards ceremony. Sadly, this may not be possible in the coming months – but we felt it was just as important to place our thanks on the record.

For supporting the CyberFirst Girls' Competition semi-final round, we would like to formerly thank the following organisations:

- **BT**
- **Lloyds**
- **Tesco**
- **PwC**
- **NATS**
- **Deloitte**
- **Morgan Stanley**
- **University of South Wales (USW) with Thales & Cap Gemini**
- **Met Office**
- **Cleeve School & CGI**
- **IBM**
- **Energus**
- **AllState NI**
- **HMGCC**
- **QA**
- **GCHQ Scarborough**
- **University of West of England (UWE)**

Without their support and enthusiasm, we simply couldn't have delivered the semi-final round – thank you!

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The winners...

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Industry Champion
IBM

Runner Up
Lloyds Banking Group



Government Champion
MOD

Runner Up
HMCC



SME Industry Champion
Global Cyber Alliance

Runner Up
Immersive Labs

There is also an additional award which will be announced by the Director of GCHQ at a later date in recognition of industry support specifically for the CyberFirst Girls' Competition.



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CyberFirst Planning for 2020-21

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At the time of writing, we are working with our summer course delivery partners, QA and the SmallPeice Trust, to move our usual five-day residential courses to an online virtual classroom environment. Each course has been split into 10 half day instructor-led sessions and spread over two weeks. Applications have been very high and we are looking to increase capacity to over 1,600 places and pushing hard to achieve that 50% male vs female split..

Is this format the way ahead? It certainly enables an alternative delivery model to face to face courses and retains the all-important instructor-led element, which students find so useful. We will have a thorough review at the end of summer and report back, but it's likely that face to face and virtual courses will be offered as a blended approach to learning in the future.

The successful Gloucestershire Cyber Schools Hub pilot has recently merged into the CyberFirst programme. Based on extensive consultation with teachers and education bodies, we have launched the CyberFirst School initiative. This seeks to recognise those schools that actively promote the teaching of computer science and technology-related subjects both in school and as part of structured out of school activity. CyberFirst Schools is currently limited to Gloucestershire and Wales and if it proves successful, then we will be looking at a staged rollout across England in the first instance.

On the back of this initiative, CyberFirst has become one of five strategic partners of the National Centre for Computing Education (NCCE), who aim to provide high-quality support for the teaching of computing in schools and colleges, from Key Stage 1 through to A Level – looks like a perfect fit!

I don't need to tell you how successful the CyberFirst Bursary scheme is proving to be, and you won't be surprised to hear that the September 2020 recruitment campaign is set to go ahead as planned. While many organisations have placed their recruitment on hold, CyberFirst stands out as a large, well-respected Bursary scheme which continues to attract some of the very best young cyber talent in the UK.

Finally, a huge thank you from all the CyberFirst team. We hope you and your families remain safe and well at this difficult time and we look forward to meeting up in the not too distant future.

As always, all our initiatives may be viewed on www.ncsc.gov.uk/new-talent

This is a world where technology is everywhere.
It's smooth-running trains
and safe flightpaths for planes.
It's power to the grid, and power to the people.
It's where #twowords can start a movement.
And where two lonely hearts can meet.
Technology means news travels fast
– and rockets travel faster.
It's language translation.
Film and music creation.
It's the life-or-death surgery that goes without a hitch.
Technology is everywhere.
And it means everything.
So it needs protecting.
At every age, from every walk of life,
we'll come together to safeguard our digital planet.
Because when tech touches lives in a million different ways,
we know that cyber security is our first line of defence.
This is being a modern citizen.
This is finding a calling with purpose.
This is a CyberFirst world.
So defend it.





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