



National Cyber
Security Centre
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This is a
CyberFirst
world.

Annual Highlight
Report **2020-21**



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The National Cyber Security Centre (NCSC) was created in 2016 as part of the Government's 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 promote innovation, develop the UK's cyber security research, and build the UK's pipeline of talented young people and encourage them into cyber security careers. 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 2020–March 2021. What a year!

A year in which so much has changed and yet so much has remained the same – just done in a different way. Which is probably the best way to describe much of the CyberFirst activity over the last 12 months.

At the start of the pandemic, we knew little about the virus, how it was transmitted and the impact it would have on the health of the population. Vaccine development was at an early stage and experts were rightly cautious about the impact they might have on both transmission and efficacy. Faced with the first national lockdown and such uncertainty, it's a huge credit to my own team and the wider CyberFirst community that when so many parts of society were scaling back on their offerings to students, we continued to provide such rewarding and inspiring opportunities right across the UK. Whether that be through increasing the number of places available on our summer courses or working with CyberFirst members to develop five days of fantastic content for Empower Cyber Week. The switch to virtual learning appeared seamless, but we should all acknowledge the tremendous work behind the scenes to make it all appear so.

Since concluding the pilot in 2016 and committing to a full programme of CyberFirst activity, the NCSC now has over 150 industry, government and academic members in the CyberFirst community; we have recruited nearly 1,100 hand-picked CyberFirst Bursary students; and we have engaged with over 55,000 students through CyberFirst courses and the Girls Competition. When factoring in the success and reach of the DCMS Cyber Discovery programme, where a further 109,000 students have taken part, we can rightly claim that CyberFirst has established itself as the UK Government's flagship cyber security student development programme.

We should remember that behind all of these metrics, there are young people who have had their horizons and knowledge expanded. Many have been inspired to pursue further learning and careers in cyber security – something which they might never have considered before. That's truly life changing and something in which we, collectively, have had a part to play.

Finally, I would like to make a special thank you to the CyberFirst team who have shown some remarkable innovation and fortitude throughout a very difficult year. I am very proud of them and all that they have achieved.

Chris Ensor
National Cyber Security Centre
 Cyber Growth

Overcoming the Challenges of Covid-19

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Hot on the heels of the successful delivery of the CyberFirst Girls Competition Final on 16-17 March 2020 in Cardiff, the UK moved quickly into a full lockdown. It was sudden and dramatic – and it presented a real problem for the CyberFirst team.

Usually, at the beginning of April, we advertise over 1,100 free places on our CyberFirst summer courses. These are five-day residential courses aimed at 14-17 year-olds, held at universities across the country. Everything was in place in preparation for the courses being opened for booking. So what to do?

The courses usually start in early July to cater for students from Scotland and Northern Ireland, but would restrictions be lifted by then? And would large residential gatherings be permitted? In hindsight, it's easy to say 'no' but at the time, so little was known about the virus that we needed to make a quick decision based on the answers to some important questions:

1. Could we successfully take course material and lab sessions built and designed for face-to-face teaching and turn it all into a virtual offering?
2. Could our learning partners, QA, put in place virtual classrooms and supply the instructors to deliver the content?
3. Could we put in place a laptop loan scheme for students to increase take-up from socially deprived areas?
4. Would 14-17 year-old students be willing to give up one week or more of their summer holidays and sit in front of a computer?

CyberFirst Industry members who supported the Academy included:

Alacrity	APMG	BT	DWP	Global Cyber Alliance
HMGCC	IBM	KPMG	Lloyds Banking Group	
NHS Digital	Nominet	Tesco	Trend Micro	QA

Working closely with QA – and with real urgency – we could say yes to the first three questions, but would students cope with five full days of online learning? We didn't know, but we took a calculated risk and extended the courses from five full days to 10 half-day sessions – either morning or afternoon.

All the planning, preparation, course dates and decision-making was completed in two weeks, ready for an excellent marketing campaign to kick off and drive student bookings from April.

The results were quite spectacular and by changing to a virtual classroom delivery model, we were able to offer the courses from mid-June to take the pressure off schools and teachers, and raise the number of free places by 61%, to 1,770.

In total, we received just under 4,000 applications, the highest number we have ever received. Of the 1,770 places available, 47% were taken up by females and 14% were from ethnic minority backgrounds (with 58% of these being female).



“The practicalities of this course and the experience I have gained are invaluable and will aid me for the rest of my life, regardless of whether I take up a career in cyber security or not. This will definitely help with the A Levels I hope to take and solidified my GCSE Computing knowledge.”

CyberFirst Course cohort 1-12 summer 2020

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Overcoming the Challenges of Covid-19 (continued)

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Whilst all this work on the summer courses was ongoing, we also needed to turn an eight-week cyber security academy for 165 CyberFirst university bursary students, usually held in Scarborough and Cheltenham, into a single eight-week virtual academy.

How could we possibly hold the attention of 165 undergraduates for eight hours a day, for eight weeks? With creativity, an abundance of enthusiasm and with the help of our CyberFirst industry members who helped turn the theory into reality – that’s how. Oh... and the odd evening Eurovision Song Contest (complete with costumes and very bad singing) helped too.

Once again, decisions had to be made early, without the usual comfort blanket of user testing to give sufficient time to rework content and build a robust and intuitive learning platform. The logistics were huge – with each student being sent a monitor and home kit to help them cope with eight weeks of full-time Academy study. As the platform developed, students were assigned a geographical location on the globe – The Americas, Europe, etc. – and each team had their own virtual break-out areas and coffee houses to discuss the sessions. Large briefings were held in the virtual auditorium where we were delighted to welcome Director GCHQ and former CEO of the NCSC, Ciaran Martin, on his very last day in office. Lab sessions were spun up in the cloud, providing the students with the freedom to experiment in a safe and legal environment. We had no idea how the students would adapt to this new way of running the CyberFirst Academy and deep down, we expected to lose some over the eight weeks. In reality, we shouldn’t have worried. We started with 165 Bursary students and we ended with the full complement – not a single student dropped out.

This is testament to the integrity of the students and the superb work of the CyberFirst team in conjunction with the dedicated QA team they work alongside. The planning and creativity to pivot in a matter of weeks – and the energy and enthusiasm to deliver the academy for the full eight weeks – was quite remarkable.

Course	Total	Ethnic Minority (%)	Male (%)	Female (%)	Non-Binary
Advanced	636	239 (38%)	331 (52%)	300 (47%)	5
Futures	499	202 (40%)	257 (52%)	237 (47%)	5
Defenders	492	225 (46%)	263 (53%)	229 (47%)	0
All Summer courses	1627	664 (41%)	851 (52%)	766 (47%)	10
Trailblazers	316	77 (24%)	159 (50%)	156 (50%)	1
Adventures	310	85 (27%)	152 (49%)	158 (51%)	0
Girl Dev Days	486	186 (38%)	0	486 (100%)	0

Suffice to say, the successful switch to virtual courses continued throughout the year, with 486 girls attending CyberFirst Girl Dev days in October 2020 and a further 626 students attending the February 2021 CyberFirst Trailblazers and Adventurers courses. In addition, the Armed Forces Cadets have just started running virtual CyberFirst courses, using our model as a template, and aim to offer 2,000 places a year.

Looking to the future, irrespective of Covid-19 restrictions, we are confident that we can continue to innovate virtual learning in ways which will inspire and educate a new generation of young people who are seeking further learning and careers in cyber security.



“I learned so much just from the first day! The whole course was a whole new realm of fascinating information.”

CyberFirst Course cohort 1-12 summer 2020

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CyberFirst Girls' Competition

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The CyberFirst Girls Competition is now in its 5th year and in that time has successfully engaged over 43,000 girls aged 12-13 across England, Scotland, Wales and Northern Ireland.

With pupils, parents and teachers under so much pressure to maintain the norms of education, we were determined to make the girls competition as engaging and exciting as ever. The opening round attracted just over 6,000 girls, which was whittled down to the top 124 teams, drawn from the Home Nations and the English regions, competing in the semi-finals. The semi-final challenges were almost entirely provided by the industry and government members of the CyberFirst community and we are very grateful for their continued support.

What was quite striking about this year's entries was that 59% of schools had never taken part in the competition before. The adoption of paid social media to promote the competition undoubtedly had a major part to play but it does illustrate just how much more work we need to do to reach a wider cross-section of schools and encourage broader participation.

The big change this year was that the Grand Final was a virtual affair – but we made huge efforts to keep the challenge and atmosphere of a face-to-face grand final. Once again it was based around a scenario, and each team had been sent a box of hands-on 'kit' that would play an integral role within the competition.

The girls clearly had a great time and we hope it gave them the confidence to explore technology, cyber and computing in the future.

Finally, a huge thank you to all the teachers and schools who took the time to enter the competition. It's been a very challenging year for students and education professionals, and we remain very grateful for your continued support.



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The top ten teams that made it through to the Grand Final 2021 were:

- **Bradford Grammar School (North of England)**
- **The Perse School (Central England)**
- **Highgate School (London)**
- **Chelmsford County High School for Girls (South East)**
- **Bristol Grammar School (South West)**
- **Our Lady and St Patrick's College (Northern Ireland)**
- **St Margaret's School for Girls (Scotland)**
- **Gwernyfed High School (Wales)**
- **Broughton Hall High School**
- **Blessed Edward Oldcorne Catholic College**



With the champions being,

Highgate School, London



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CyberFirst Schools and Colleges




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The rollout of CyberFirst Schools has continued despite all the challenges of Covid-19. In the first year of the pilot, a total of 27 schools and Colleges from Gloucestershire, Wales, Northern Ireland and North East England have been recognised by the NCSC as providing enhanced opportunities and good standards of teaching in computing, cyber and technology related subjects.

A huge thank you to the teachers, schools and colleges who have been through a rigorous assessment process; now the work begins to encourage local industry and academia to “adopt” a school or college and help provide further inspiration and opportunities for students.

Over the next 12 months we will be exploring ways in which we can expand CyberFirst Schools and Colleges into Scotland and the remaining English regions. Watch this space!



	<p>Bridgend College, Bridgend, Wales Cardiff High School, Cardiff Cardiff and Vale College, Cardiff Cleeve School and Sixth Form Centre of Excellence, Bishops Cleeve, Gloucestershire Coleg Cambria, North East Wales Coleg Gwent, South Wales Newent Community School and 6th Form College, Newent, Gloucestershire Saint Ronan’s College, Lurgan Wydean School and Sixth Form Centre, Sedbury, Gloucestershire</p>
	<p>Cirencester College, Cirencester, Gloucestershire Corpus Christi Catholic High School, Cardiff The Dean Academy, Lydney, Gloucestershire Denmark Road High School, Gloucester Gloucester College, Gloucester, Gloucestershire North East Futures UTC, Newcastle Upon Tyne Ribston Hall High School, Gloucester, Gloucestershire Rougemont School, Newport Royal Grammar School, Newcastle SGS Berkeley Green UTC, Berkeley, Gloucestershire South Eastern Regional College, Co. Down St Joseph’s RC High School, Newport St Patrick’s College, Dungannon Stroud High School, Stroud, Gloucestershire</p>
	<p>All Saint’s Academy, Cheltenham, Gloucestershire Dalriada School, Ballymoney Knockevin Special School, Downpatrick Winchcombe School, Winchcombe, Gloucestershire</p>

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CyberFirst Bursary 2020

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The CyberFirst bursary scheme continues to go from strength to strength, attracting highly motivated and extremely talented undergraduates. 132 students graduated in summer 2020, which means that since 2018, a total of 92% of Bursary students have moved into full-time cyber security roles. We currently have 641 hand-picked students in the scheme who are sponsored by the NCSC or by industry members, and in March 2020, we made provisional offers to a further 226 students who we hope to welcome in September 2021.

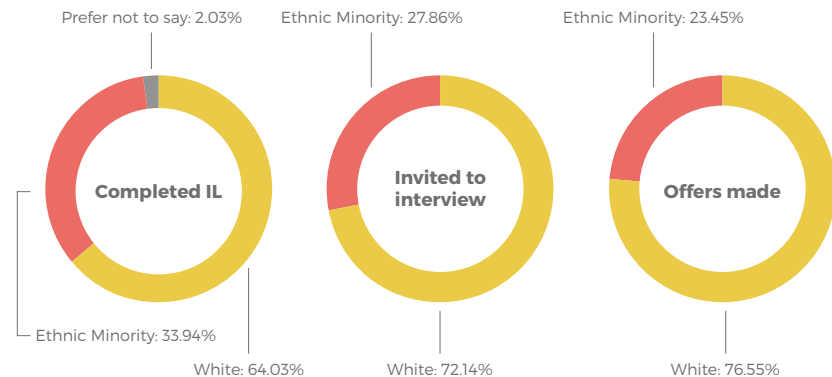
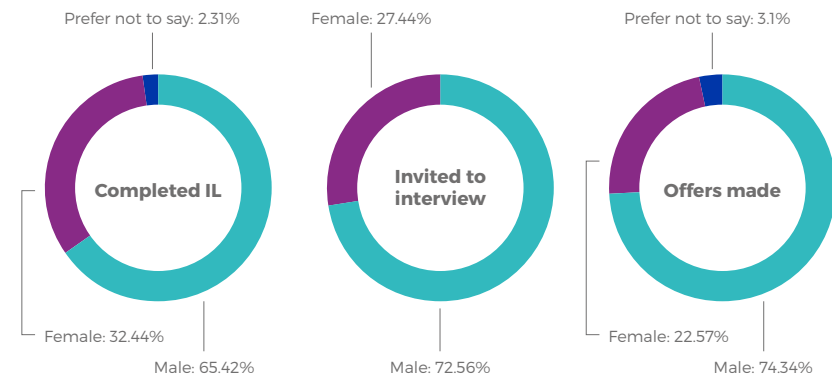


The bursary remains focused on encouraging applications from females and students from ethnic minority backgrounds, which this year were up by 6% and 32% respectively. There is clearly more work to be done, particularly when it comes to supporting candidates through the entire assessment process and into a successful bursary place.

One of our new initiatives is CyberFirst Seekers, which is a one-week course for up to 50 young women and ethnic minorities aged 17-18, based on the CyberFirst Advanced course but incorporating additional business-related learning and career guidance. It aims to act as a booster to those underrepresented in the cyber security profession. At this stage, CyberFirst Seekers is a pilot but should it prove successful, we intend to add it to the CyberFirst portfolio of student activities.

Finally, another huge thank you to the CyberFirst community, who went out of their way to provide invaluable summer work placements for the CyberFirst students, in spite of the Covid restrictions. The NCSC hosted 165 students on the CyberFirst virtual Academy and in total the team found placements or development opportunities for all 398 Bursary students. Those work placement offers are continuing to be made for summer 2021 and for the very first time, there are more placement offers than there are students seeking placements. We can't stress enough the importance of these development opportunities and I know the students are particularly grateful. Thank you.

Cohort 6 Diversity



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CyberFirst Members

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The interest in and membership of CyberFirst has seen steady growth over 2020 and 2021. The demand for more remote working has certainly had an impact – and reminded all parts of society just how dependent we have become upon digital connectivity and services.

We have also seen and benefited from the willingness of organisations to do their bit to help develop the skills of young people, whether such organisations are focusing on supporting CyberFirst Schools, writing challenges for the Girls Competition, providing speakers for the CyberFirst courses or offering hundreds of summer and year in industry placements. It all points to a really committed community who are prepared to invest in the next generation of UK cyber security professionals.

We now have 116 industry members in total and, thanks to all those who have returned their annual reviews, we are now able to announce that the following companies have been granted CyberFirst Partner status for 2021-2022:

- **BT**
- **QA Ltd**
- **Global Cyber Alliance**
- **Qinetiq**
- **IBM**
- **Allstate**
- **BAE Systems Applied Intelligence**

A special welcome to **BT** and a welcome return to **BAE Systems Applied Intelligence**.



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Planning for 2021/22

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One of the central pillars of the UK Government's National Cyber Strategy is to strengthen the UK's Cyber ecosystem. CyberFirst has a key role to play in this space by helping to build and shape an education system that delivers the diverse cyber talent the country needs now and in the future.

Building on the hugely successful ecosystem that has built up in Gloucestershire, with Cynam at its core, we're now aiming to develop something similar for the whole of the UK. An initial pilot scheme is being developed for the South West of England which seeks to develop and grow links between industry and education establishments to support cyber security education and knowledge, whilst showcasing the range of cyber security careers available. As always, we are on a steep learning curve and any lessons we learn will be fed into the review – and future plans.

We are also delivering additional CyberFirst training for teachers. Working with the NCCE and our CyberFirst schools, we are introducing teachers to the CyberFirst Futures course. Early indications are that there is a huge appetite amongst the teaching community and, subject to funding, it's an activity we will look to deliver at a scale to match the growth of the CyberFirst Schools programme.

Our colleagues in the MOD have renewed their commitment to delivering CyberFirst courses to 2,000 Armed Forces Cadets each year and we plan to work with the new National Cyber Force to deliver yet more CyberFirst courses to students aged 12-17. In the first instance, these will focus on students in the North West of England and then progressively expand across the UK.

Finally, we are eagerly awaiting the results of the DCMS Invitation To Tender (ITT) CYBER SKILLS AND CAREERS INSPIRATION PROGRAMME FOR YOUNG PEOPLE which seeks to provide a Digital Solution (or Solutions) to inspire and support 11-14 year-olds' engagement with cyber security across the UK.

Each and every one of these initiatives provides opportunities for our CyberFirst members, schools and colleges to work alongside the NCSC and wider government to help develop a new generation of exceptionally motivated and talented young people to keep the UK the safest place to live and work online.

As always, you can read about all our initiatives online here:

www.ncsc.gov.uk/cyberfirst/overview

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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smallpeice
Dare to imagine



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