



National Cyber
Security Centre
a part of GCHQ

This is a
CyberFirst
world.

Annual Highlight
Report **2018-19**



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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 Department for Digital, Culture, Media and Sport (DCMS) to close the cyber skills gap.

Welcome to the CyberFirst Annual Highlight Report for April 2018 - March 2019. Now three full years in and with an all new look and feel, CyberFirst continues to establish itself as the UK Government's flagship cyber security development programme. The early years have focused exclusively on providing inspiring opportunities for many of thousands of young people but in conjunction with DCMS, we hope to include a number of initiatives designed to attract and develop adults seeking to retrain or return to work – watch this space!

Over the last three years, we have consolidated the CyberFirst activities and worked hard to make our activities rewarding and truly accessible to students. We have hosted over 4,200 students and 1,500 parents at our free courses and have seen the MOD announce £1m funding to deliver CyberFirst content across the Military Cadet Forces. Government has been joined by Energus, Santander, Think Marble, BAE Systems, QA, the Met Police and the University of South Wales in delivering CyberFirst courses to secondary school aged students which has added another welcome dimension to the programme. I'm also delighted to report that the CyberFirst Defenders, Futures and Advanced courses have been SCQF credit rated by SQA which provides an independent verification of their value in the wider educational context.

The CyberFirst Bursary scheme continues to attract high calibre candidates. We now have 465 Bursary students and have made a further 300 offers in April in preparation for the September 2019 intake.

The latest CyberFirst Girls competition was yet another hugely successful event. Over the last 3 years, over 24,000 girls have taken part, making it the largest cyber security competition in the UK and we have plans to grow it further from 2020 onwards. Anecdotally, we hear from teachers, parents and pupils of the positive impact these gender specific interventions are having and we hope over time, these initiatives will make a positive difference to the career choices of young women.

Finally, a personal thanks from me for all the support we have received from the government and industry members of CyberFirst – I truly believe the CyberFirst community is quite special in its construct and philanthropy and it will have an increasingly important role to play in the ongoing development and expansion of CyberFirst, helping to make the UK one of the safest places to live and work online.

Chris Ensor
National Cyber Security Centre
 Cyber Skills and Growth

CyberFirst Adventurers

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The one day CyberFirst Adventurers course has proved to be as popular as ever. Aimed at students aged 11-14yrs and their parents, the course consists of four themed modules entitled Digital Detective, Go Create, The Data Games and Crack the Code.

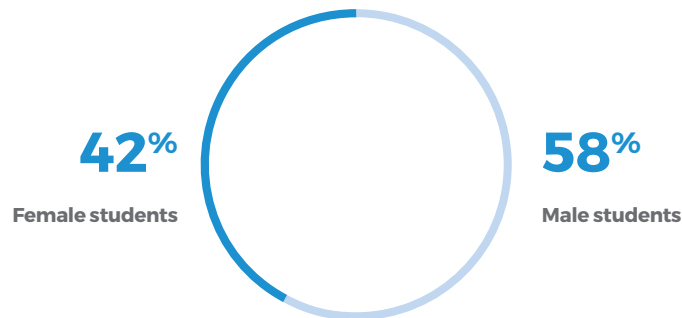
We have added 2 new modules for 2019; Engineering, which looks at how computing is used in modern day design, construction and engineering; and Creative Computing, which shows the importance of computing in the music, film and TV industries. The course aims to showcase the varied roles and jobs that exist which are underpinned by computing and cyber security skills and to encourage greater take up of Computer Science at GCSE.

By the end of March 2019, a total of 807 students and a corresponding number of parents and teachers had attended a CyberFirst Adventurers course in every part of the UK.



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

Student aged 12 - Cardiff Metropolitan University



Adventurers Map



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CyberFirst Defenders

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Summer 2018 clocked up another milestone for the CyberFirst team, where we were able to work with government, academic and industry colleagues in Northern Ireland to deliver our first CyberFirst Defenders course. It proved to be hugely successful and we are delighted to add Northern Ireland as a permanent location for our CyberFirst activities.

In total, the CyberFirst team delivered 8 CyberFirst Defenders courses aimed at 14-15yrs olds which ran over 5 days. The courses were a mix of residential and non-residential and provided 374 UK students with a valuable introduction to all the tools, knowledge and skills they need to build and protect small networks and personal devices.

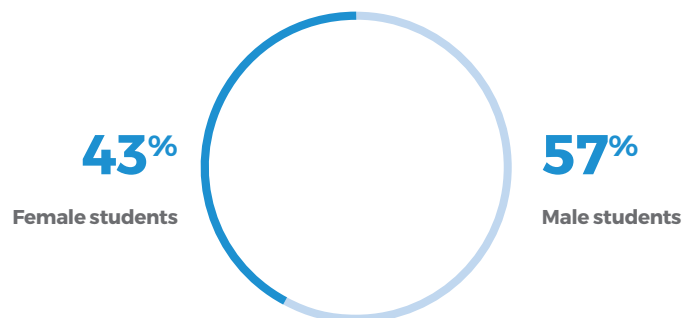
In particular, the students had the opportunity to learn about:

- **Cyber Security threats**
- **Define and apply first line cyber defences**
- **Construct, configure and secure a home network**
- **Manage and secure personal digital footprints**



“The course was really interesting with a good balance of practical and theory...and it’s been really easy to make friends.”

Student aged 15 – University of Gloucester



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

CyberFirst Futures

A total of 9 CyberFirst Futures courses were run in the summer of 2018. Aimed at 15-16 year olds, and running over 5 days, the course introduced 397 students to the more fundamental challenges faced by commercial and non-commercial organisations.

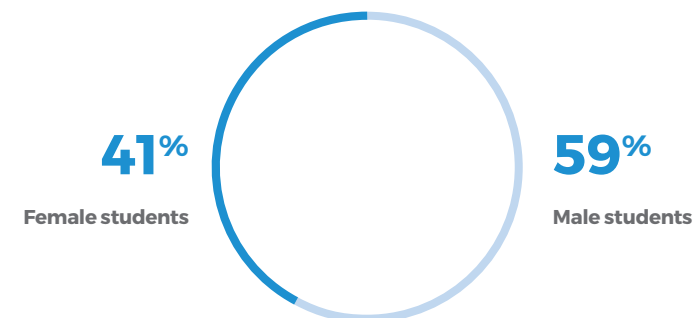
In particular, the students had the opportunity to learn about:

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



“I’ve found the course really, really great; we got to bypass operating systems...it’s really opened my horizons to what you can actually do.”

Student aged 15 – University of Lancaster



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 2018, a total of 8 CyberFirst Advanced courses were run for 394 UK students aged 16-17 years and about to enter their final A 'Level year. The course is 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.

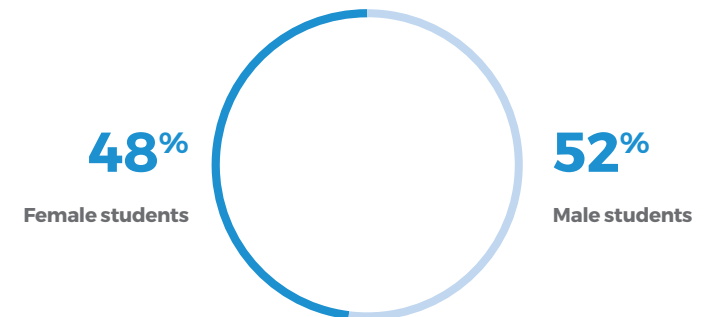
In particular, the students had the opportunity to learn about:

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



“Before the course, I’d never heard of digital forensics, and I’d like to explore that further and possibly go on to a career in that subject.”

Student aged 17 - University of Warwick



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

CyberFirst Girls Competition

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We know that many young women rule themselves out of a career in cyber security – which means we are missing out on an extraordinarily talented group of people.

Now in its third 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.

The competition followed the previous year's successful format, consisting of two distinct phases:

- an online round of fiendishly difficult challenges to identify the top ten teams
- and the 'Grand Final', where the top ten teams tackled a real-world scenario at a location in Edinburgh.

This year the online round attracted 11,802 girls which is a staggering 166% increase in participation on 2018. The competition received entries from 841 schools and over 3,350 teams.

At the Grand Final the girls and teachers were treated to dinner in the incredible surroundings of Edinburgh Castle in the company of Deputy First Minister for Scotland, John Swinney and the competition played out in the aptly named Playfair Library, a part of Edinburgh University.



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

- **Watford Grammar School for Girls, Hertfordshire**
- **Beverley High School, East Riding, Yorkshire**
- **Oxford High School GDST**
- **Denmark Road High School, Gloucester**
- **Chelmsford County High School for Girls, Essex**
- **The Tiffin Girls' School, London**
- **St Catherine's College, Armagh**
- **Withington Girls' School, Manchester**
- **Queen's School, Chester**
- **Royal Masonic School for Girls, Hertfordshire**

With the champions being,

The Royal Masonic School for Girls,
Hertfordshire



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CyberFirst Bursary 2018

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The CyberFirst Bursary scheme continues to go from strength to strength, attracting highly motivated and very talented undergraduates. With 16 students already graduated and in full time cyber security roles, we currently have 439 hand-picked students in the scheme. Throughout April, we will be offering a further 300 Bursaries and if they all accept, the Bursary scheme will hold over 700 students, keeping us on track to hit our target of having 1,000 students through or in the system by 2020.

In September 2018, all 13 CyberFirst graduates accepted positions with GCHQ or industry members and in the summer of 2019, a further 43 will graduate and 39 have already received excellent job offers from members of CyberFirst. In 2020 the numbers really start to ramp up and we will have 132 students graduating and seeking employment within the CyberFirst community.

The CyberFirst Academy welcomed 100 Bursary students throughout the long hot summer of 2018. 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 134 students on 8 week summer placements with industry and government and have already received 340 placement offers for the summer 2019 cohort.

The number of females successfully joining the CyberFirst Bursary scheme has risen from 15% in 2017 to 24% in 2018. This is a significant 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.



"Before CyberFirst, I came from a background with minimal to zero cyber knowledge. So I know it might feel to you as if sometimes other people know way more, but remember that you have different skills and experience to offer. Embrace that and be confident in your ability: you can thrive here.

Take my first cyber security experience; the CyberFirst Bursary Scheme Academy. It was eight weeks of teaching from experienced industry experts, living in halls together. We spent our weekends exploring the area and our evenings discussing what we'd learned – and I'm not exaggerating when I say I left the academy knowing I'd been part of something amazing.

I think our need to employ passionate, hardworking people in cyber security becomes more and more evident each day. It's easy to take for granted that all the things we do online are relatively safe, but that's mostly down to some very talented, driven individuals dedicating their careers to keeping people safe behind the scenes.

So, don't just assume that there will always be some clever people around to make sure that social media platforms aren't hacked or that the bank's voice recognition can't be beaten. You've got to get involved, because it's accessible now to actually become one of those clever people – by joining CyberFirst."

CyberFirst Bursary student



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CyberFirst Bursary

Current UK University locations

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University College Falmouth
 University of Oxford
 University of Lancaster
 Bath Spa University
 Cardiff University
 University of Southampton
 The Royal Veterinary College
 University of Derby
 Bournemouth University
 University of the Arts, London
 University of Stirling
 Edge Hill University
 University of Surrey
 University of Essex
 The Liverpool Institute for Performing Arts
 University of Reading
 University of Sussex
 University of Bedfordshire
 University of Kent
 Newman University College
 University of Cambridge
 De Montfort University
 University of Edinburgh
 University of Leeds
 Northern School of Contemporary Dance
 The Queen's University of Belfast
 Leeds Metropolitan University
 Edinburgh Napier University
 Cardiff Metropolitan University
 Abertay Dundee
 University of the West of England, Bristol
 Courtauld Institute of Art
 Brunel University
 Royal College of Music
 The Manchester Metropolitan University
 Bishop Grosseteste University College Lincoln
 Kingston University

University of Wolverhampton
 The City University
 School of Pharmacy University of London(The)
 University for the Creative Arts
 St Mary's University College
 The Robert Gordon University
 Trinity Laban Conservatoire of Music and Dance Ltd
 University of the Highlands and Islands
 Queen Mary and Westfield College, University of London
 University of East London
 Goldsmiths' College
 University of London
 Teesside University
 University of Northumbria at Newcastle
 Staffordshire University
 University of Gloucestershire
 Birmingham City University
 Central School of Speech and Drama(The)
 University of Glasgow
 Coventry University
 University of Portsmouth
 Harper Adams University
 Leeds College of Music
 Glasgow School of Art
 Prifysgol Aberystwyth
 University of Winchester
 University of Plymouth
 University of East Anglia
 University of Bristol
 University of St Andrews
 The University of Bolton
 Queen Margaret University, Edinburgh
 University of Ulster
 University of Warwick
 Th University of Northampton

University of Leicester
 University College Birmingham
 Glasgow Caledonian University
 The University of Westminster
 University of Huddersfield
 Royal Agricultural College
 Heythrop College
 Royal Welsh College of Music and Drama Limited
 Rose Bruford College
 University of Salford
 Writtle College
 London School of Economics & Political Science
 Middlesex University
 Open University(The)
 Southampton Solent University
 Buckinghamshire New University
 University of York
 University of Lincoln
 University College London
 University of Brighton
 Loughborough University
 Glyndwr University
 London School of Hygiene and Tropical Medicine
 Liverpool Hope University
 University of Hertfordshire
 University of Sheffield
 University of Durham
 Nottingham Trent University
 University of Strathclyde
 The University of Chichester
 Heriot-Watt University
 London Business School
 University of Birmingham
 The University of Cumbria
 University of Exeter
 Sheffield Hallam University
 University of Dundee
 Scotland's Rural College - Aberdeen
 Roehampton University
 University of Sunderland
 Anglia Ruskin University
 Institute of Education, University of London
 Swansea University
 Royal Holloway College and Bedford New College
 Royal College of Art(The)
 Cranfield University

University of Keele
 Leeds Trinity University College
 King's College London
 St George's Hospital Medical School
 Norwich University College of the Arts
 Leeds College of Art
 Aston University
 University of Chester
 University of Aberdeen
 The University of Manchester
 Royal Conservatoire of Scotland
 University of Nottingham
 Stranmillis University College
 University of Newcastle Upon Tyne
 Bangor University
 University of St Mark & St John
 The University of Buckingham
 University of Hull
 University of Glamorgan / Prifysgol Morgannwg
 Royal Academy of Music
 London Metropolitan University
 St Mary's University College, Twickenham
 Canterbury Christ Church University
 The Conservatoire for Dance and Drama
 Birkbeck College
 University of Liverpool
 Institute of Cancer Research: Royal Cancer Hospital (The)
 University of Greenwich
 York St John University
 University of Wales: Trinity Saint David
 Swansea Metropolitan University
 Guildhall School of Music and Drama
 University of Bradford
 London South Bank University
 University Campus Suffolk Ltd
 University of the West of Scotland
 Liverpool John Moores University
 University of Bath (The)
 The Arts University College at Bournemouth
 The University of West London
 Oxford Brookes University
 School of Oriental and African Studies
 Royal Northern College of Music
 University of Central Lancashire
 Imperial College of Science, Technology and Medicine
 University of Wales Prifysgol Cymru
 University of Worcester

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CyberFirst

Planning for 2019/20

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This year's approach is all about consolidating and building on what we have successfully delivered to date whilst taking onboard lessons learned from 2018/19. In addition, we will be working with DCMS to pilot ways to engage adults that are looking to transition into cyber security careers. We all know this is a difficult nut to crack and recognise that any course learning must be accompanied by practical work experience to enhance the prospect of future employability.

The 22 CyberFirst summer courses are already live and we have witnessed a significant number of returning students taking advantage of our new 'early bird' booking process. In Autumn 2019, we are looking to split our CyberFirst Adventurers course into 2 distinct offerings; one aimed at year 8; and the other aimed at year 9 students; and across all our courses, we will have an increased focus on attracting students from socially deprived areas and from more diverse backgrounds.

The CyberFirst Girls competition is set for a few 'tweaks' to build on its success. The most noticeable will be to extend the online round from 1 week to 2 weeks to allow more time for participation. In addition, we are exploring ways in which we can offer semi-finals in each of the devolved administrations and in the regions of England. Another key development is how we might use the competition platform to run cyber security challenges for women across government. If this proves successful, then there is the option to open out to industry and wider society.

The CyberFirst relationship with the MOD is a great model of how government can combine expertise and resources to deliver training to thousands of young cadets. We wish to expand this collaboration by working with the RAF Youth STEM outreach team and the other single services to have even greater reach and impact.

Finally our relationship with industry is critical to the future viability and long term success of CyberFirst. The 700 or so students in the Bursary scheme continue to be fantastic ambassadors and the development and career opportunities industry and government can offer are a highly attractive proposition for the UK's brightest and most capable cyber security talent.

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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