Cleeve Park School Case Study

Cleeve Park School is a non-selective academy in Sidcup, South East London. The school is the local authority's specialist resourced school for students with physical disabilities, and the number of pupil premium-eligible pupils is just above the national average. Overall, 55% of students achieved 5A*-Cs including English and Maths in 2016.

The school received a 'Good' judgement from OFSTED (January 2015) and outstanding English results place them in the top 5% of schools nationally.

The school has struggled to recruit subject specialists in science and consequently have struggled to offer sciences at A Level. This is reflected nationally, with only 62% of physics teachers having a physics-related degree in 2015.

The school is a part of The Kemnal Academies Trust, which provides teacher training for new teachers, including Researchers in Schools participants.

Researchers in Schools Partnership

RIS began working with Cleeve Park September 2016 through The Kemnal Academies Trust and placed 4 participants within the school; 2 Physics, 1 Biology and 1 Maths.

Cleve Park School became involved having had the programme recommended by a local partner school.

The programme involves participants being placed for an initial three years, during which they train to teach and then work as qualified teachers. Whilst on the programme, participants have one day off-timetable per week to work towards the aims of the programme: championing university access, disseminating subject expertise and promoting research.

This includes running the Uni Pathways programme: participants work with a small group of Year 10 pupils over Year 1 and Year 2 of the programme, delivering university-style learning, supporting their attainment and university readiness. These university-style tutorials are based on previous research completed by participants at postgraduate level.

Participants

Dr Alice Len (RIS 2016 Physics participant)

Dr Alice Len competed her PhD at the University of Sydney, investigating the effect of environmental pH on the proteome of the dental pathogen *Streptococcus mutans.* She then moved to University College London and completed post-doctoral research into A phosphoproteomic approach to elucidate HIV-1 virological synapse signalsome signatures in CD4+ T cells with the Department of Infection and Immunity.

Uni Pathways Title - *Disease Detective: Putting the pieces together to solve the mystery of what drives disease*

Dr Carmelo Di Natale (RIS 2016 Maths participant)

Dr Carmelo Di Natale graduated at the Sapienza University of Rome, graduating with distinction before moving to the University of Cambridge to complete his PhD in Grassmannians and Period Mappings in Derived Algebraic Geometry. Dr Di Natale then completed a year at Newcastle University as a research associate funded by EPSRC.

Uni Pathways Title - *The "whole" is not necessarily larger than the "part"! An introduction to transfinite cardinals*

Dr Thomas Conlon (RIS 2016 Physics participant)

Dr Thomas Conlon was awarded a Master of Physics in Physics with Space Science and Technology. He stayed at the University of Leicester, completing a PhD in STEREO Observations of Solar Wind Transients in the Inner Heliosphere and was funded by the Science and Technology Facilities Council. After receiving an offer to teach at Cleeve Park School, he joined as a teaching assistant in May and returned in September as the only Physics specialist in the department.

Uni Pathways Title - *The Solar Shooting Gallery: Designing a Spacecraft for Space Weather Monitoring*

Dr Penelope Bramwell (RIS 2016 Biology Participant)

Dr Penelope Bramwell gained a PhD from the University of Warwick exploring The Characterisation and Detection of Plant Pathogenic Streptomycetes. Dr Bramwell has had extensive experience working for DEFRA, including taking posts as Head of GM Policy team and Deputy Chief Scientist at the Food Standards Agency.

Uni Pathways Title - *Food and risks to the food chain*

School Perspective

Jenni Tyler Maher, Executive Headteacher:

Over the past 4 years it has become increasingly difficult to recruit good quality science teachers into secondary schools; we were really struggling to build a team of qualified and committed science teachers until RIS were introduced to us. Our science department has been completely transformed with the addition of our RIS trainee teachers. They have brought a vibrancy to the school that our Head of Faculty had been desperately looking for. Their passion for their subject has lifted the whole school's attitude toward science and has enabled us as a school to offer the individual sciences to more students in Key Stage 4 and to build up the sciences in Key Stage 5. As a Head Teacher I am very proud to have a team of dedicated scientists teaching scientists of the future and for once feel like we are finally starting to address the void that has been present for too long.

Rowen Lodge, Head of Department

Having RIS here at CPS has such a positive impact on our students. Having our RIS participants has enabled us to showcase the wide range of backgrounds that our science teachers have come from, drawing in the interest of our students. Our students are becoming more and more inquisitive about the world of science and are being given some great opportunities through the contacts we are able to make via the RIS teachers. I am proud to be the Head of Faculty of such a rapidly developing team and I am excited to see Science is growing stronger here at CPS, with lots of plans for the future.

Rachel Dixon, Director of Learning and Professional Mentor

Having RIS work and train within our school has brought with it such a wide range of opportunities for our students and an exciting new dimension to our school. They have come to us with a clear moral purpose and a real commitment to our students and helping them to fulfil their potential. The unique research projects that they are running with our young people have opened up a whole world of new ideas and opportunities for our students

Carmelo Di Natale, 2016 Maths Participant

I feel very lucky to have been placed in such an amazing school. I feel like for the first time I am part of a team. The School has provided with fantastic support and I have received excellent training from TKAT. I am building confidence in teaching and I have really enjoyed inspiring students to engage with maths and consider studying maths in the future at university.

Alice Len, 2016 Physics Participant

I wanted to join RIS as I grew up in underprivileged circumstances and the people that strongly influenced me were the enthusiastic and passionate teachers that made science come to life for me. This experience is allowing me to help pupils realise their full potential and I can bring cutting edge research and opportunities into the classroom.

Widening Participation

Dr Len has organised for a group of Year 12 students to complete work experience next summer at UCL and is in current negotiations with KCL's medical outreach program to host a medical student at Cleeve Park to teach the students about the healthcare and medical field. As part of her Uni Pathways course, Alice is arranging an external organisation, Debate Mate, to come and support a group of students to develop communication skills and build confidence.

Dr Conlon has supported the School during their summer holidays, designing a science day for the event. He is also preparing to launch his Uni Pathways course, has ran a taster lesson for Year 11 students looking at choosing to study A Level physics and has led several year group assemblies about university access. Dr Conlon plans on starting a STEM club at the end of this year due to the increased interest in Science at school and the enthusiasm that Uni Pathways has generated.

Dr Di Natale has a range of university experience and is currently using his RIS day to not only complete mathematical research, but has also joined some of the King's College Widening Participation Activities, including giving up his evenings to support the King's Factor. The King's Factor is a widening participation initiative providing Year 12 and Year 13 students the opportunity to tackle challenging maths problems, as well as enrich and develop their mathematical thinking.

Subject Impact

RIS participants have brought to their subjects a wealth of knowledge and experience and enriched their departments. Particularly within the science department, RIS participants have become an integral part of the team and allowed the department to develop and offer subject expertise to their students.

'Our students are becoming more and more inquisitive about the world of science and are being given some great opportunities through the contacts we are able to make via the RIS teachers.' Rowen Lodge, Head of Science Department.

'Their passion for their subject has lifted the whole school's attitude toward science and has enabled us as a school to offer the individual sciences to more students in Key Stage 4 and to build up the sciences in Key Stage 5.' Jeni Tyler Maher, Executive Head.
Students have become increasingly interested in STEM activities that RIS participants can now offer.

The commitment and dedication of our RIS trainees, along with their subject expertise and the support of Cleeve Park School has allowed them to flourish and benefited their departments. Dr Conlon, for example, has been involved in sessions run by the school to give current Year 11's more information about A-Levels and their options. Dr Len has continued working with UCL's department of biomedical research and has acquired a £15, 000 microscope for Cleeve Park's science department; donated by Professor Bill Richardson.