

I would like to thank the Royal Society of Biology for giving me this opportunity. I feel incredibly privileged to have the chance to again be a finalist in this competition. I am particularly grateful to Pam O'Mahony and Jeremy Slater for their support and nomination. Having been a finalist in 2019 was amazing, [my previous case study can be found here](#) and while I may reference and build on some of the things in it, this case study will focus on a selection of teaching, projects and events since then.

Remote teaching and Mr Gill's Science Stuff.

It goes without saying that the last two years have necessitated some radical rethinking of pedagogy and teaching. On the 20th of March 2020, I launched a teaching YouTube channel: ['Mr Gill's Science Stuff'](#). Over 140 varied - and in some cases eccentric - videos later, the channel has nearly 300 subscribers and is utilised by students and staff alike. I wrote, filmed and produced every video lesson and accompanying activities for year groups from KS3 to beyond A Level. The content initially drew on my own teaching

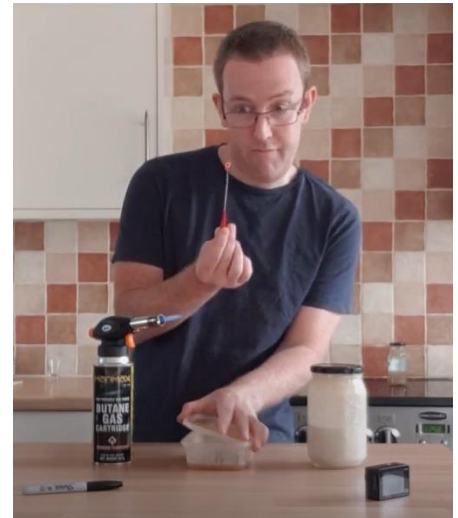
resources delivered via simple picture in picture and grew to full green-screen production taking in materials from my expeditions and other 'biolidays' as well as anything I could find lying around the house.

I am particularly proud of some of the more unusual video lessons on the channel, such as the various DIY home practicals I undertook to liven up lockdown lessons. These included making [homemade agar plates](#) using takeaway boxes, chicken stock, brewing sugar, a sparkler and a blow torch for yr9 ([results](#)

[here](#)); making my [own quadrat out of an old fence panel](#) to run an A Level sampling lesson in my garden and of course ["Mr Gill's Revision Egg"](#) - *how many AS level topics can you cover with one egg?* Students commented that these were the best remote lessons they'd had and parents also expressed their gratitude for keeping their children engaged and motivated through the rigours of homeschooling.

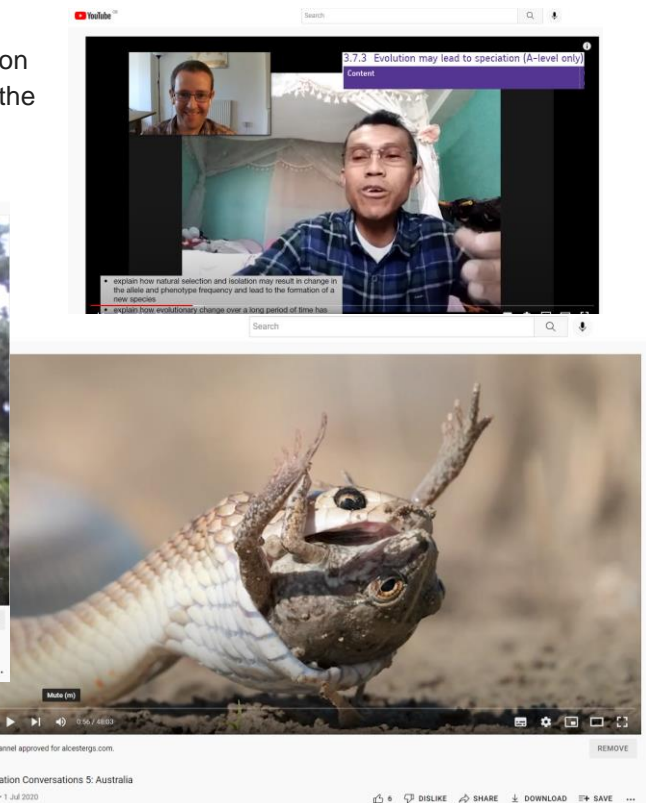
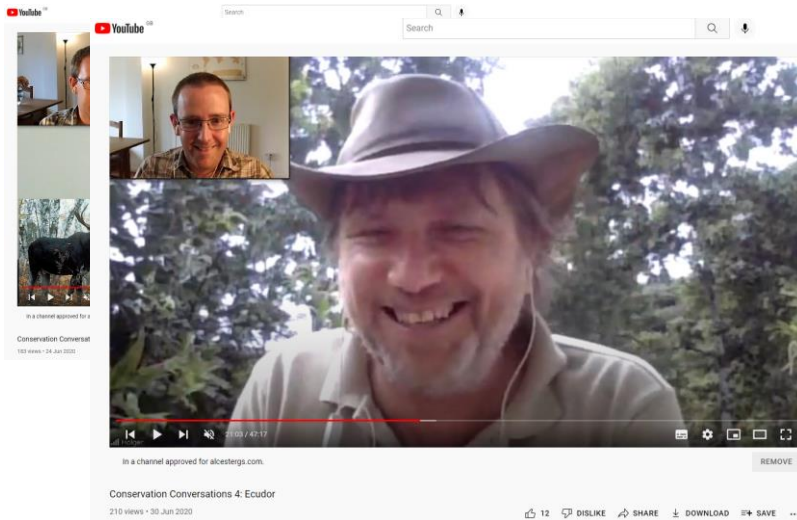
Conservation Conversations.

Perhaps my favourite video project to date has been ["Conservation Conversations"](#). This project was an attempt to replace some of the feeling and excitement of fieldwork in the summers of 2020 and 2021. I drew on my contacts from my four previous international expeditions to biodiversity hotspots around the world. [See 2019 case study for details.](#) Conservationists on every inhabited continent on the planet agreed to discuss their work with me and link the importance of their part of the world to the A Level specification. Starting in Madagascar, I



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took the students on a global virtual fieldwork tour that took in Canada, Transylvania, the UK, the cloud forests of Ecuador and the northern territories of Australia. These videos have been watched hundreds of times by students both within AGS and elsewhere. I have reports of students in the USA using them via familial connections as well as the local hospital education unit making extensive use of them thanks to a recommendation from one of my students being treated as an inpatient at the time.

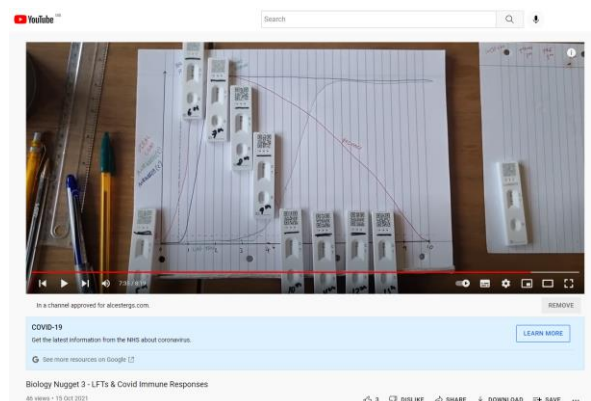


Biology Nuggets



Like the vast majority of the profession I was forced to isolate in October 2021. This left my yr13s with a remarkably dull set of cover lessons and independent study. So, to brighten their biology lessons for those 10 days I recorded 3 “biology nuggets” for them while in isolation. The first on [autumnal](#)

[photosynthetic pigments](#) links to their syllabus and particularly to required practical 9, the second on my [mushroom farming](#) endeavours links to nutrient cycles and the third, [an experiment carried out on my own infection](#), to immunology and graph skills.



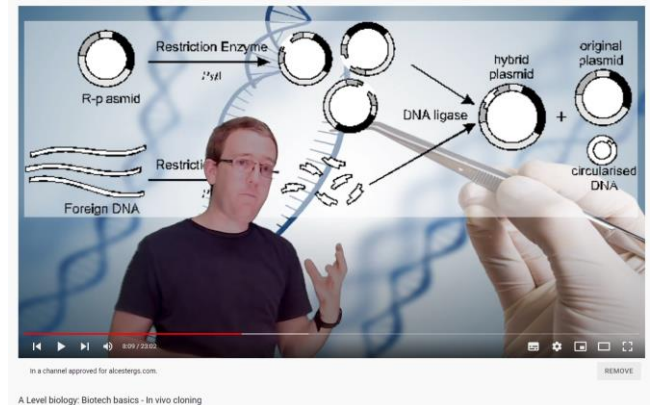
Other video lesson series that were particularly effective include:

[“Biotech Basics”](#) and [“Gene Expression”](#) - covering all of the challenging molecular content from the end of the A Level.

“Ecosystems and Biodiversity” - covering the parts missed from the 2021 GCSE course. These were produced at the request of my GCSE students despite the fact the content was not being tested.

“Accessing A Level Biology” - laying out the differences between GCSE and A Level biology.

For examples of the amazing student responses to some of the more interesting tasks set this way please see [@AGSBiology on Twitter](#)



Opwall, Fiji and Remote Work Experience



In 2019 I completed my 4th successful international expedition with [Opwall](#), this time to Fiji. The 18 students and I were involved in initial surveys of the unstudied forests and reefs of the Natewa peninsula, supporting efforts to found the [first national park in Fiji](#). Latest reports are that this has succeeded and substantial protection for this unique area is underway. Pictured are

my sighting of the endemic orange Natewa dove, our base camp, and a dive selfie I was also able to use as part of the [RSB's “I am a Biologist” Twitter campaign](#).

Unfortunately Opwall was badly affected by the pandemic as all international travel shut down. Having made many strong contacts and friends at Opwall I felt the need to help, so I contacted founder Dr Tim Coles OBE with a proposal [for online work experience/internships](#). Opwall picked up this idea and ran with it. I continued to assist where I could in the design and development of the package. It was a great success and allowed Opwall to



protect the jobs of the entirety of their science team. I later assisted with their UK expedition project at Knepp Park.



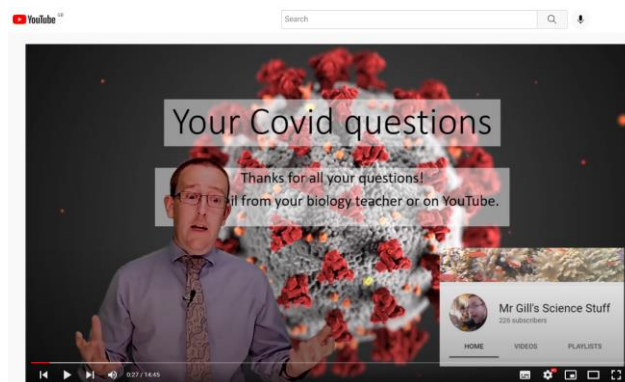
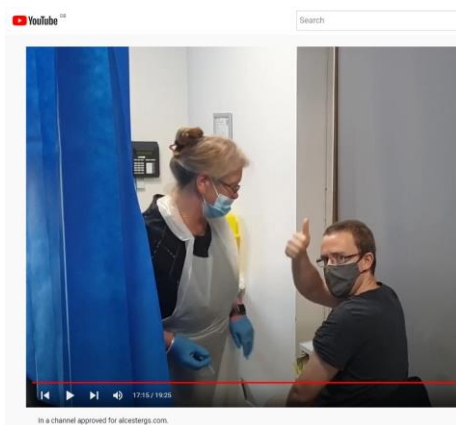
Covid,

ON-LINE WORK EXPERIENCE

Tutored Internships available

supporting students and staff CPD

During the pandemic, I advised the headteacher on interpretation of the ever changing rules and tried to spread



accurate and valid information about every aspect of the pandemic. I produced two series of video lessons as well as a [Q&A assembly on the pandemic](#) for the whole school in which I debunked myths, explained the science, offered a behind the scenes view of [our LFT testing centre](#) (in which I was acting as a tester) and even [had my own vaccination filmed keeping a post vaccination video diary](#) to help boost confidence in the vaccinations as they were rolled out.

I also produced a number of well received internal videos for staff on the use of remote teaching tools such as google classroom and OBS screen reader, covering delivery, assessment and feedback in a remote learning environment. This academic year I have been speaking regularly with new and recently qualified teachers running workshops on pedagogy, use of voice in the classroom and differentiation. As part of the Shires Teaching Alliance I am now speaking at multiple schools to trainees from multiple universities.



Academic Societies

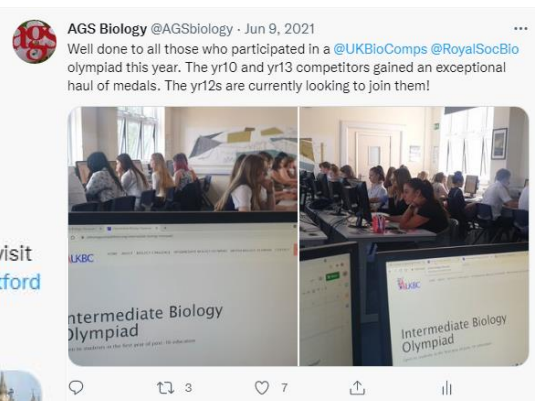
During the pandemic, I'm delighted to say the academic societies initiative continued to flourish with remote society meetings, virtual events and even remote speakers in medicine, law, politics and more. There are now 13 student-led societies focused on everything from philosophy to medicine to activism.

I also arranged for a number of remote activities within biology, including running every RSB olympiad and challenge, even during lockdowns. All ~75 yr12 biology students took part in the iBO in 2020, the largest uptake we've ever had! Pictured is the tweet from the 2021 iBO.

Happy new term everyone! Kicking off "careers term" with a great yr12 visit to Oxford. Many thanks to the AGS alumni at @lmhoxford, at @KebleOxford and @WorcCollegeOx who showed us around their colleges and to @KebleOutreach for the informative sessions.



 Climate, environment, ecology and conservation EcoSoc@alcestersgs.com	Tue Gg4 1240
 Engineering and technology EngSoc@alcestersgs.com	Wed - 1300 - Dr1



In late April 2022 I also led the very first school trip, post-pandemic, to make in person visits to Lady Margaret Hall, Keble and Worcester Colleges Oxford. Yr12 were shown around exclusively by AGS alumni.

The AGS orchard



With my support, a group of students added an Eco Society to the wider societies initiative. Their first project was to establish an orchard. This was successfully completed in the spring of 2021 thanks to a grant from the UK Tree Council. We now

have 15 established young fruit trees of native varieties happily growing on site. Last year's year 8 took on watering duties to ensure they established well and we've even had a student make and install a hedgehog box after camera trapping data revealed they were active in the area.



[Rewilding Alcester Corridor.](#)

[and the Wildlife](#)



In May of 2021, AGS [received a letter from Tony Turner](#), a local landowner, farmer and businessman. He offered us a 23 acre site of arable land to rewild and restore to a parkland environment. Having taken an initial group of students from the school's Eco and Engineering Societies to the site, I realised this was too big a project for just one school. [We established some camera traps and](#) ran river surveys, botanical surveys and soil analysis which generated plenty of excitement but we needed help. I therefore reached out to numerous people to get the project moving. Amongst them were **John Akeroyd** (Botanist to HRH Prince Charles and fellow of the Linnean Society) who advised on seed mixes and suitable species, **Liz Lake** of farm advisory charity LEAF who sourced plants and linked us with wider Alcester projects (see below) and **Ian Jelly** of the Warwickshire Wildlife Trust. Ian then involved **Severn Trent** and the **Environment Agency**. After meetings with local councillors and the above parties there is now a [well developed proposal for a multimillion pound wetland redevelopment project](#) along the River Arrow with education at its core. In March 2022, with the help

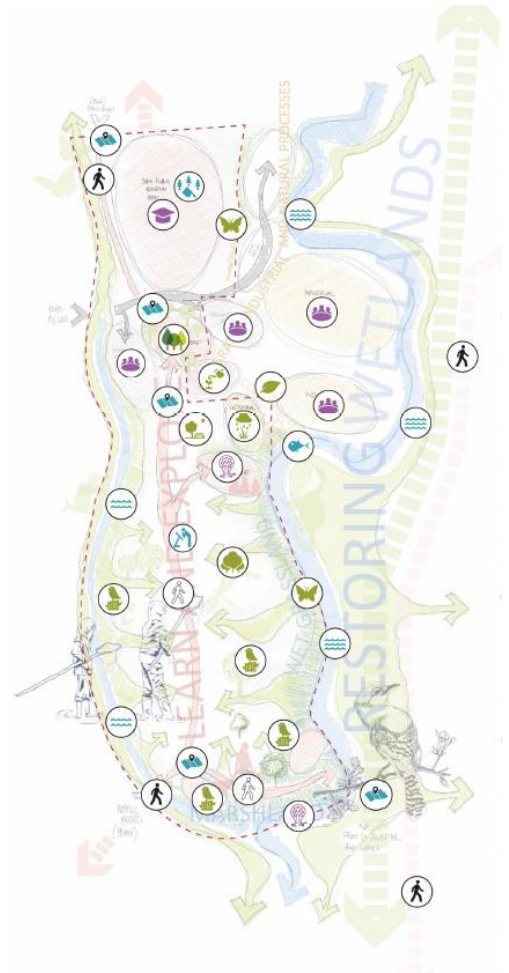
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of Liz Lake of LEAF, students planted dozens of native trees and bushes on the land to mark out an area we hope to be an AGS wildlife garden.

Latterly our students have become increasingly involved in other local ecology projects, planting the first trees on the Abbey Fields site



behind our school with the aim of creating a wildlife corridor along the river arrow right to the centre of Alcester. Students from EcoSoc even got invited to work on an education pack with the Lower Severn Drainage Authority (of all people!) and featured in [the countryside classroom newsletter](#).

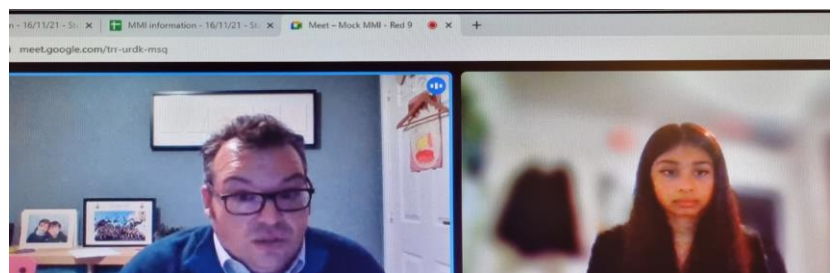
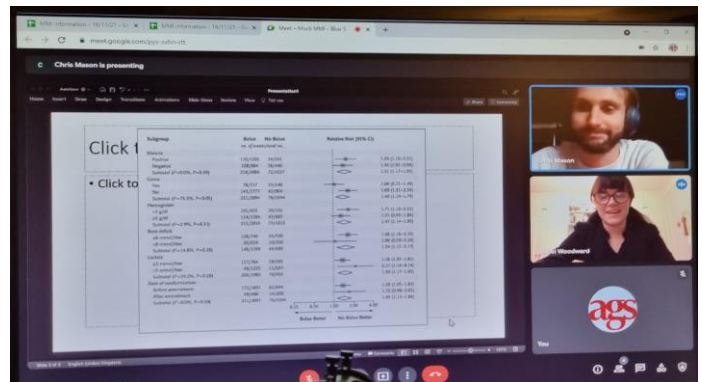


Our partner the [Association of Drainage Authorities \(ADA\)](#) teamed up with LEAF Education recently to launch a pack of educational resources ideal for teachers of GCSE and A Level geography. The teaching tools include a range of materials ideal for learning about flood management in lowland areas such as the [Somerset Levels](#) and the [Fens](#). In addition the recently launched [Meet a Drainage Engineer](#) field visit pack trialled by sixth form students from Alcester Grammar School, Warwickshire, provide teachers with everything they need to organise a free visit to their local drainage authority. Interested in joining a free training event where all materials will be showcased? Then go [HERE!](#)

Virtual mock interviews and MMIs

Another remote education success which went beyond AGS was the virtual mock interview programme for early applicants in both 2020 and 2021. As teacher in charge of applications to Oxbridge, med/vet/dent etc., I had to react and come up with a programme of mock interviews when it was uncertain what the universities themselves were doing. Oxbridge one-on-one virtual mock interviews were relatively straightforward to arrange and allowed me to call on interviewers from around the world, but the virtual mock MMI clinical interviews were a real challenge and something of which I'm very proud. MMIs typically involve up to 10 short stations that candidates circulate around in one room. I designed a system where 15 clinicians in individual google meets recreated the same clinical stations with 25 students from 2 schools over 4 hours. The logistics of the event were challenging but it went flawlessly both years. Stratford Girls Grammar School are very appreciative of the efforts supporting their students as well as our own. *Pictured: Dr Chris Mason - Assistant Dean, St Hugh's College Oxford interviews candidate from SGGS. Dr Ben Wild - Breast Surgeon, Warwick Hospital poses an ethical dilemma.*

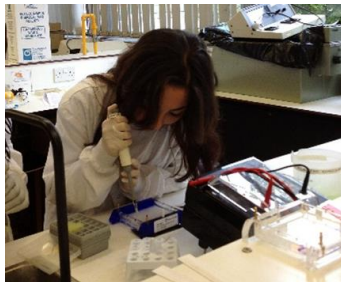
Projects with the University of Warwick.



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Over the last 10 years I have been working with Warwick Outreach to deliver a 3 day “biology bootcamp” course for students from deprived backgrounds. The 2022 course ran in the Easter holidays and while exhausting received highly positive feedback.

Having maintained close ties with the Biology department at Warwick I was put in touch with **Prof. Mike Tildesley** - a member of SPI-M advising SAGE - regarding a project looking to model the impacts, physical, social and psychological, of the pandemic on young people. I am of course delighted to be part of this important work recruiting schools to the study and offering the teacher's perspective. Prof. Tildesley also visited the school to give a talk on pandemic modelling to a packed room of enthused students.



While I have not been able to include everything I would have liked in this case study, I wanted to end with this message as it speaks to why I do this job and why I put my heart and soul into all the above. This came from [Sarah, the Syrian student I mentioned in my 2019 case study](#) who credits me with her success moving from 3 Es at another school to 3 As and attending UCL. Receiving this, for me, is one of the best rewards a teacher can get.



Hi Charles (feels odd not calling you Mr Gill anymore!!) I hope you're well. Don't get to check Facebook often but I wanted to let you know that I'm due to start my Biology PGCE this September! Your support while I was at Blue Coat helped me a lot and played a role in me wanting to become a teacher. You've been name dropped a couple times during my interviews! Currently deciding between Warwick or UCL... open to any advice or tips you may have. Wishing you the best!

24/05/2020, 14:25

It is a genuine honour to be considered for this award; it has made this academic year, which also saw the birth of my first child, even more exceptional. Below is an appendix of other projects, events and teaching tricks that I have created, been involved in or completed since 2019. I look forward to meeting with the judges in the near future.

Appendix 1: other activities since 2019.

- Thinking Skills** - running, teaching and managing AS Thinking Skills as a twilight course for the most able. Includes recruiting staff, implementing a new specification, TAGs and liaising with yr11 students not yet at AGS.
- Kickboxing** - In the summer of 2019 I qualified as a full black belt and instructor in Zhuan Jiao Kuan (a form of Chinese kickboxing). I have started an AGS club and now have a regular membership who are moving up through the belts. Kickboxing still enters my classroom from time to time in physiology and sports science lessons!
- The AGS seed bank** - given the therapeutic value of gardening, in early spring 2022 I started an AGS staff seed exchange program. Staff have appreciated the opportunity to bring and share unused seeds via the underused biology greenhouse. I have even had my form group involved in a bit of therapeutic gardening to alleviate exam stress!
- National Professional Qualification in Leading Teacher Development (NPQLTD)** - This academic year I have undertaken a national course in leading teacher development at the recommendation of our assistant head in charge of teaching and learning. This goes hand in hand with the CPD I'm delivering to trainees and early stage teachers from multiple schools and will qualify me to lead teaching and learning at a whole school level.
- Music** - I have been intermittently supporting the school's fledgling "Rock Band" project and [questing on bass in school virtual music projects](#). As an experienced rock, prog, pop, metal and samba bassist this has been a nice musical outlet throughout the pandemic.
- Careers** - In 2022 I have led the renewed post pandemic push to revamp and further improve whole school careers provision. This has involved successful funding bids totalling over £4000, purchasing and other logistics to turn a former canoe store into a fully functioning careers hub complete with graphics tablets, virtual meeting and green screen capabilities. This space is now used for virtual university and degree apprenticeship interviews as well as careers appointments and more. The project was featured in Warwickshire CCs Careers newsletter as an exemplary use of careers funding.
- Aim High** - As mentioned, I continue to function as the school's Aim High coordinator. This involved being responsible for all Oxbridge, clinical and law applications as well as degree apprenticeships and ensuring students maximise their chances of attending the most demanding courses. As well as overseeing early UCAS applications, (and in part through the societies) I have run talks, fayres, open evenings and more to support and enthuse the most able. *Pictured: talk from a legal apprentice, a practising solicitor and an appeals barrister to aspiring legal students.*

