



RI Online Youth Summit 2022

Forensic Science

Evaluation Report

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Background

The Royal Institution Online Summit started in October 2020 as a pandemic inspired alternative to the regular post Lectures youth summit that took place at the RI in April following the lecture.

It was conceived as an opportunity for post 16 students from across the UK to express their opinions and listen to peers on the social and ethical issues relating to the upcoming CHRISTMAS LECTURES. The intention is for those views to feed into the development of the lecture scripts.

In 2022 the summit took place on Wednesday November 2nd to discuss Forensic Science. It preceded an in-house summit taking place later that month.

Teachers were initially informed about the summit at the end of the summer term 2022. A delay in announcing the Christmas Lecturer due to the unusual September news cycle pushed back the invitation to enrol students until a few weeks into the term.

Production on the summit began early October with content due on October 24th. Teachers were given access a week before for students to spend some time reading and watching preparation material.

Commentary

The day was successful.

- The number of students was good
- They came from the right schools
 - Dover to Stranraer and Belfast
- 64% of students were from priority schools (30+ mins from Uni or above average FSM)
- The content was well received and engagement was excellent
- Some changes are required
 - Clearer purpose on 1st chat to get students oriented more quickly
 - A shorter summit. A half day would be better.
 - Stricter moderation in early and less guided chats (eg AirJacking)
- Impact on students was good
 - They came away with a much more nuanced post-summit view of forensic science

Inputs

Key figures

Schools requesting and given access	66
Schools registering students	25
Students logged in	303
Students active	199 (66%)
Chat lines	5,013
Student Chat lines	4,858
Unique visitors on day	507
Page views on day	18,970

Interest from teachers was initially very strong. However conversion to student sign-ups was below expectation. Some teachers reported difficulty in getting students off-timetable, other teachers became unresponsive. In future, it would be useful to publish more information and content further in advance.

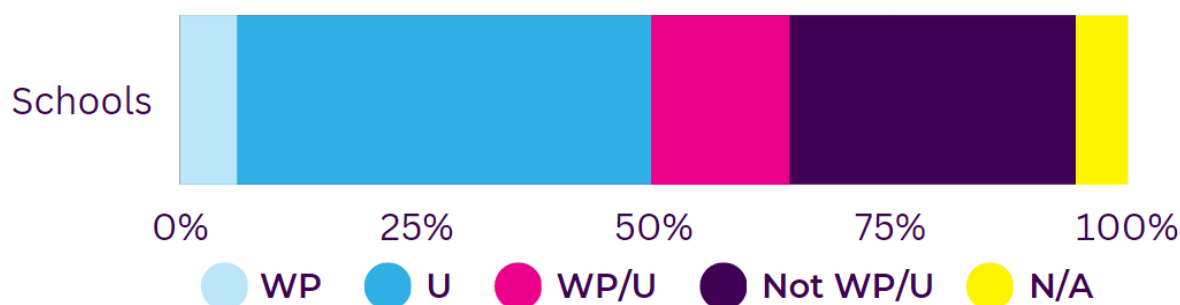
303 students logging in was just above expectations. However the proportion who actively participated was lower. This will have been due in part to some schools blocking Vimeo leading to some students giving up before YouTube alternatives were provided or school network permissions being altered.

Some teachers also expressed concern that more preparation materials and formal tasks during the day would have improved engagement and focus.

Schools

We work to prioritise schools in geographically underserved areas and widening participation schools¹.

64% of active students were from priority schools.



58% of participating UK schools were located more than 30 minutes from major research HEI (underserved locations). Our research shows that these schools are half as likely to get a visit from a university scientist than schools within 15 minutes of a HEI².

21% of participating UK schools were widening participation schools with above average percentage of students eligible for free school meals (currently more than 14%).

That 64% of students were from priority schools and 98% hadn't visited the Ri indicates that the online summit is helping to reach the right students.

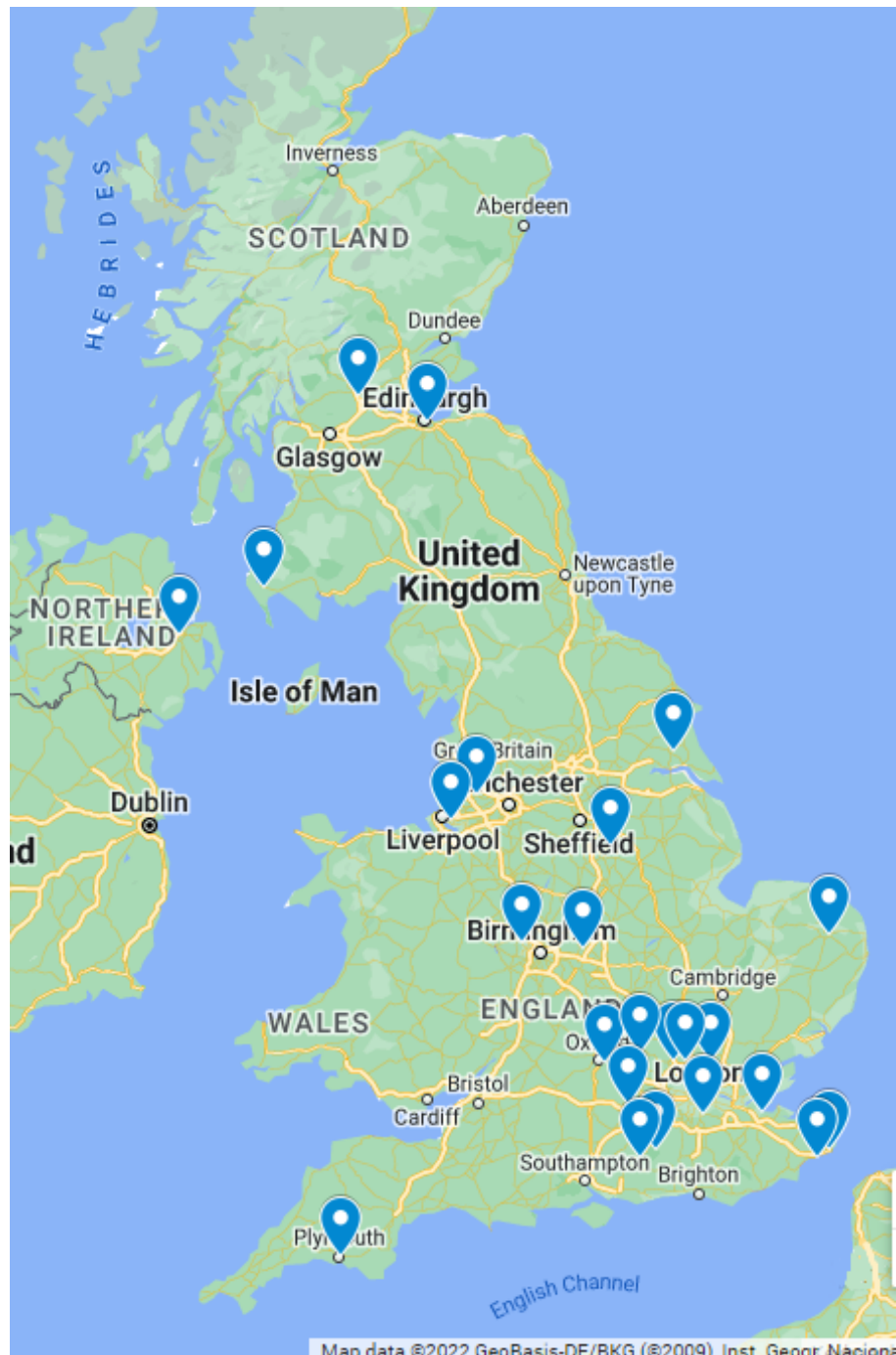
¹ about.imascientist.org.uk/under-served-and-wp/

² imascientist.org.uk/distance

Active Schools

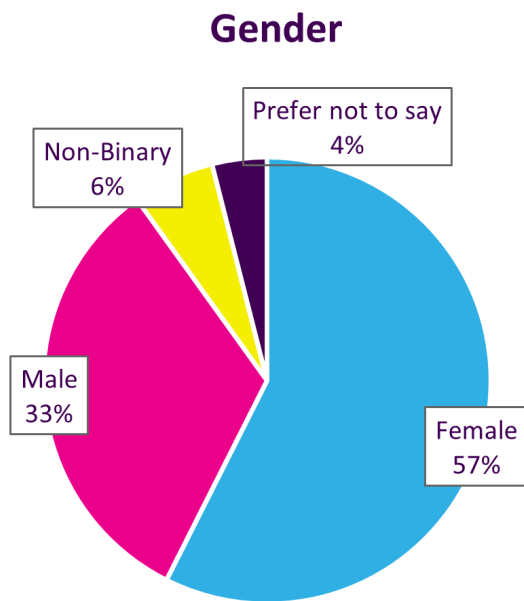
School Name	Students logged in	Active users	Lines of Chat
Dover Grammar School for Girls, Dover (U)	35	25	436
John F Kennedy Catholic School, Hemel Hempstead (U)	31	17	445
Robert Barclay Academy, Hoddesdon (U)	25	17	234
Wigan and Leigh College, Wigan	20	15	272
Etone College, Nuneaton (WP/U)	13	13	567
Stranraer Academy, Dumfries & Galloway (U)	16	13	454
Colton Hills Community School, Wolverhampton (WP/U)	22	11	28
Transylvania College: The Cambridge International School in Cluj, Cluj-Napoca 400445	20	11	154
Harris Invictus Academy Croydon, Croydon (WP)	15	11	253
City College Norwich, Norfolk	12	9	254
Kings Oxford, Oxford	12	9	70
MidKent College, Gillingham (U)	9	8	226
Earlscliffe (Sussex Summer Schools Ltd), Folkestone	17	8	66
Stirling High School, Stirling	6	7	108
George Heriot's School, Edinburgh City	15	6	49
Meden School, Mansfield (WP/U)	5	5	84
Aylesbury High School, Aylesbury (U)	5	4	18
UTC Reading, Reading	7	4	165
Beaumont School, St Albans (U)	6	3	7
Devonport High School for Girls, Plymouth	3	1	12
Beverley Joint Sixth, Beverley	1	1	17
St Dominic's School, Godalming	1	1	8
St Dominic's High School, Belfast (WP)	1	1	2
Bohunt School, Liphook	1	1	1
Liverpool College, Liverpool	0	1	12

The location of the schools (map on right) also indicates that the summit is able to bring together students from across the country including Northern Ireland and Scotland, as well as the places that make the Ri 'hard to reach'.



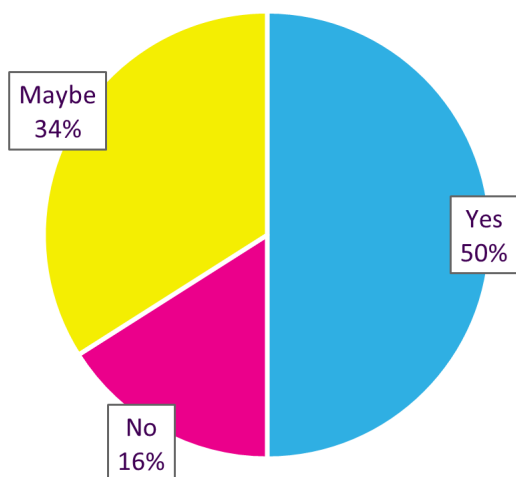
Pre-summit survey

Students were asked to complete a survey before the summit. There were 127 unique responses.



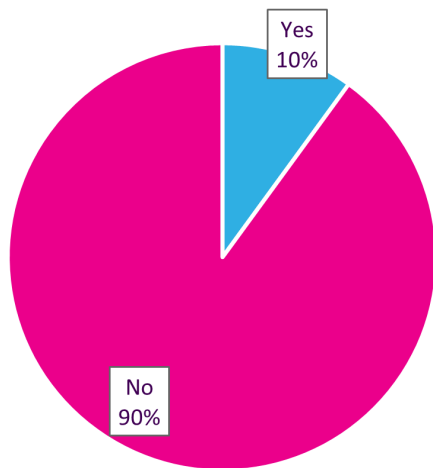
- Female 58%
- Male 33%
- Non-Binary 6%
- Prefer not to say 4%
- n=126

Study science at university



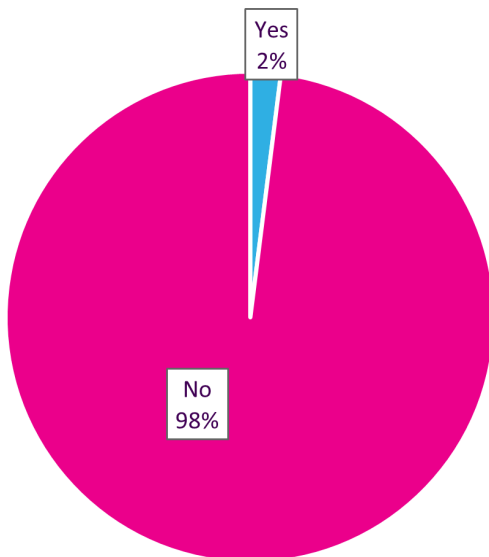
- Yes 50%
 - No 16%
 - Maybe 34%
 - n=126
-

Watched CHRISTMAS LECTURES



- Yes 10%
- No 90%
- n=125

Visited the RI



- Yes 2%
- No 98%
- n=125

The survey results indicate a slight bias towards female students. Due in part to two single sex schools participating and possibly in terms of willingness to complete a survey.

There was an expected high proportion of students wanting to study science at University.

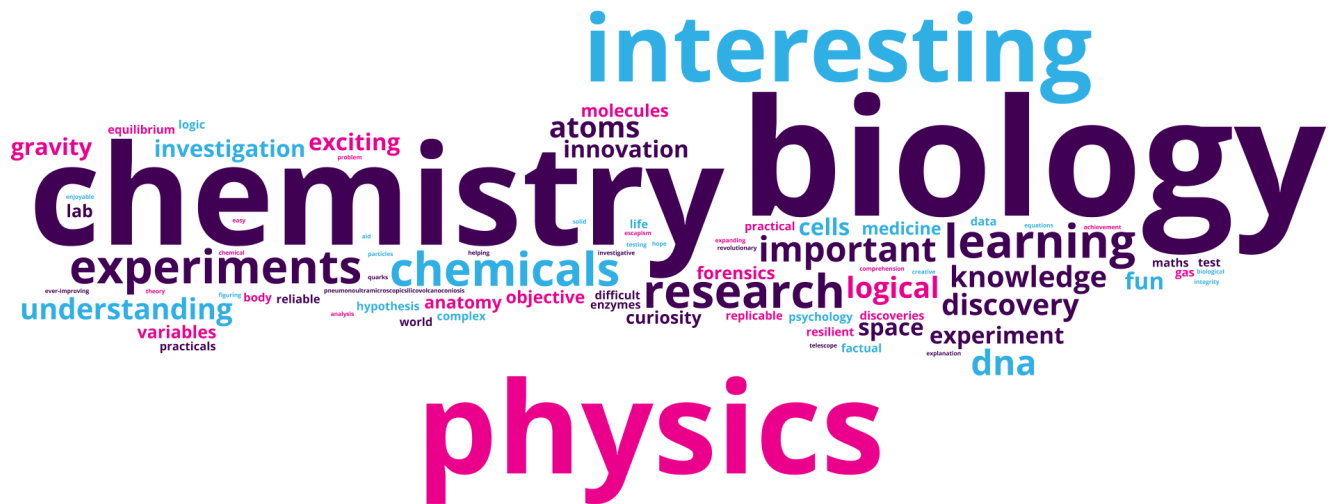
Attitudes towards science

	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
Learning about science is fun	43	76	7	3	1
Learning about science is important	68	58	2	0	1
I would like to learn more about science inside and outside of school/college	44	51	28	4	3
I think science is a good career option for someone like me	43	52	30	3	2
Science has an important role in our society	76	50	1	2	1

The summit was not aimed at students with low science capital. We don't expect that with sixth form science students. The survey confirmed our expectations.

Students were asked to give three words they associate with science. The word clouds illustrate the frequency with which words appear. The bigger the more frequent.

3 words associated with science



There is nothing surprising here.

They were also asked for three words associated with Forensic Science

3 words Forensic Science PRE-survey



Again. Not surprising. It does however get interesting when compared to the post-survey.

Outputs

The Summit consisted of stimulus material and chat discussions.

199 active students wrote 4,858 lines of Chat

Chats

Fact vs Fiction

Students were able to select from 4 different chats themed after popular crime TV shows. A total of 89 students selected and were able to move between the following Chats: Line of Duty, Sherlock, Silent Witness, CSI. The Venn diagram below shows the distribution of students and which chats they visited.



Chat data

Chat name	Students active	Lines of Chat
Line of Duty	26	158
Sherlock	52	344
CSI	34	154
Silent Witness	22	180

Engagement example

Emily S @modapril: I see these TV shows as more of an entertainment platform than an informative platform, so not necessarily.

modapril @EmilyS: That's a good perspective to keep. Do you think other people do this?

Emily S @modapril: No, I think the media influences a large amount of people into believing jobs and roles are the same as in TV shows

modapril @EmilyS: Is this problematic for juries?

RobynneH @modapril: I can definitely see it being misleading for juries in real life in court cases

ennaecO @RobynneH: that's true actually, most of us are exposed to media so in real life jury opinion may be swayed by the media especially with a preconceived bias

RobynneH @ennaecO: yeah, it's weird to think how much of our lives are influenced by what we see in the media

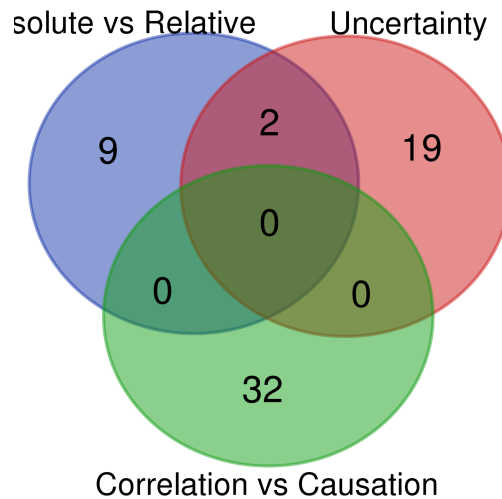
Chat: Sherlock

Students: 52 active

Lines: 344

Misleading statistics

Students were able to choose between 3 different Chats themed around statistics and its use and misuse. A total of 55 students participated across the 3 Chats by taking part in one of the following: Absolute vs Relative, Uncertainty, Correlation vs Causation. The Venn diagram below shows the distribution of students and which chats they visited.



Chat data

Chat name	Students active	Lines of Chat
Absolute vs Relative	11	59
Uncertainty	21	99
Correlation vs Causation	32	183

Engagement example

Chat: Correlation vs Causation

Students: 32

Lines: 183

modsuzanne Some great discussion points coming out on the interaction between media and statistics, do you trust organisations like the office for national statistics?

ennaecO @modsuzanne: many types of media even official statistics can be used as manipulation of the general public to influence them to do what the higher ups want

EmilyS @modsuzanne: Everyone is able to do their own research, therefore having a 'set amount' of statistics doesn't work in our society as there is always an uncertainty.

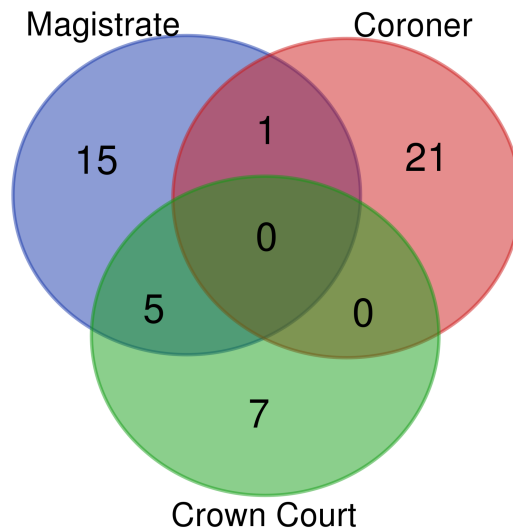
DylanL @modsuzanne: yes

ennaecO plus there are so many fake websites people believe anything they see because no one knows what is true or not anymore

Konnoro @ennaecO: It can be really hard to know what is and isn't okay, but I think there are always places you can go, like peer reviewed scientific journals and such like

When forensics meets the justice system

Students were able to choose from 3 different Chats discussing different practices and requirements in different courts across the UK justice system. A total of 44 students were active across the following chats: Magistrate Court, Coroner Court, Crown Court. The Venn diagram below shows the distribution of students and which chats they visited.



Chat data

Chat name	Students active	Lines of Chat
Magistrate Court	21	83
Coroner Court	23	130
Crown Court	12	84

Engagement example

Chat: Crown Court

Students: 12

Lines: 84

modapril Do you think it's fair to have juries for some cases and not others? In what circumstances is it appropriate to not have a jury?

EmiliaD @modapril: I think having a jury makes the cases verdict more efficient as there are lots of different views and people from different backgrounds in the jury. However some cases that may be classified as sensitive especially may be better without a jury

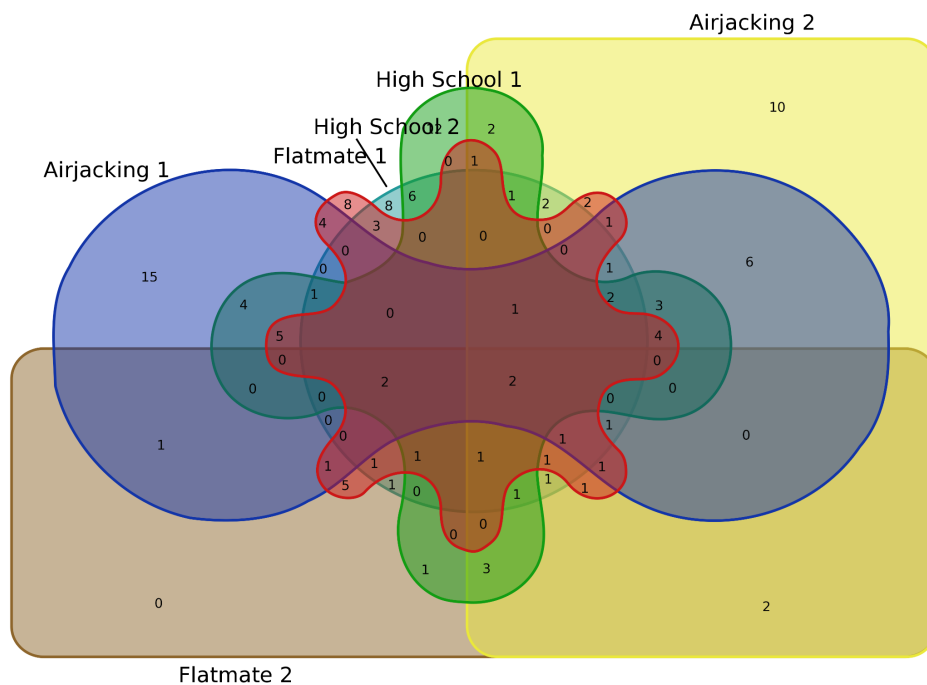
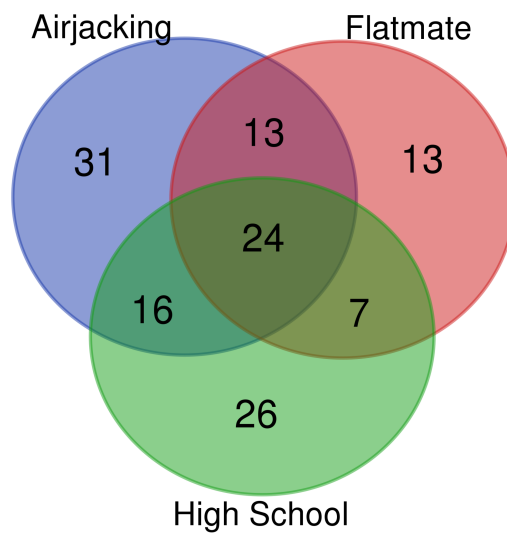
modapril @EmiliaD: great point; the purpose of having a 'jury of your peers'

Lucina @modapril: In scotland, there are cases that are not tried by a jury - these are all well defined though and anything big or complex is tried in front of a jury

GeorgeB I think if the justice system was exactly the same no matter what there would be less discrepancies between cases and court ruling

Case studies and their discussion

Before and after lunch, students were given 3 different case studies to learn about and discuss. The Chats were split into two sections with more information being given before each discussion. A total of 130 students took part across the 6 Chats. 3 Chats happened at the same time. The three case studies were referred to as Air-jacking, Murder of a Flatmate in Italy and Murder of a High School Student. The Venn diagrams below show how students moved from one Chat to another. The top diagram shows the total numbers of students across the two parts, whereas the diagram below separates it into the 6 Chats.



This is simply too confusing to be useful and too beautiful to leave out.

Chat data

Chat name	Students active	Lines of Chat
Air-jacking Pt.1	56	378
Air-jacking Pt.2	51	584
Murder of a Flatmate Pt.1	46	391
Murder of a Flatmate Pt.2	28	254
Murder of a High School Student Pt.1	53	393
Murder of a High School Student Pt.2	38	210

Engagement examples

Chat: Air-jacking

Students: 84

Lines: 962

less why did it take a person to take a bomb on to a plane and to take \$200,00 just to install metal detectors and better safety precautions? its just crazy

modmegan @less: This is a great question? Do you think we generally wait for bad things to happen before bringing in safety measures?

Angel K @modmegan:yes i think we do

less @modmegan: yes absolutely and everything should be thought of so nothing like this can happen

#3 biology fan @less: dont think thats what caused it

freddieh @less: criminals can be much more creative with their crimes as it is much harder to predict what others might do

less @freddieh: yes but if the safety precautions were in place theres no way he would of reached the plane

Chat: Murder of a Flatmate in Italy

Students: 57

Lines: 645

modapril @Lauren: could more background info lead to prejudice? Or is history relevant?

EmilyS @modapril: it would lead to more prejudice.

EmilyL @EmilyS: History can be relevant but I think her being violent in the past isn't enough to prove that she murdered someone

Lauren @modapril: i dont think its relevent in this case. How would this be fair. Just because someone has a violent past doesnt mean that they should have a target on their back. It would make the jury more in favour of them being guilty

FlorenceG @modapril: it depends on what the evidence is. some could be relevant but it could also be prejudicial

EmilyS @modapril: No, im more saying are they religious, a person of colour, or apart of another minority community that the media might have wanted to demonise.

modapril What do we think about how DNA evidence is treated by the public? Do you think it carries more weight than other evidence?

EmmaP @modapril: i think the public views DNA as something that is definite and can't be confused - like in tv shows

modapril @EmmaP: great pullback to James Gooch's talk there

ennaecO @EmmaP: unfortunately that is the case. DNA can be contaminated, tested wrongly and even picked up from people not even present at the time

EmmaP @ennaecO: yeah and it doesn't help that the general public may not get this

ennaecO @EmmaP: yeah unfortunately not many people are aware of this because DNA is represented as definite in most media, like you said

Chat: Murder of a High School Student

Lines: 603
Students: 73

DidanS @KonnorO: So the bottom line is police should be trained to handle evidences properly

modjudit @DidanS: That's a good point. What about the jury? Do you think they made any mistakes?

ZoeC @modjudit: I think the decision may have been rushed

JackSandMillie:) @modjudit: i think the verdict the jury came to was down to the mistakes of the prosecution as there were two other suspects that were not announced

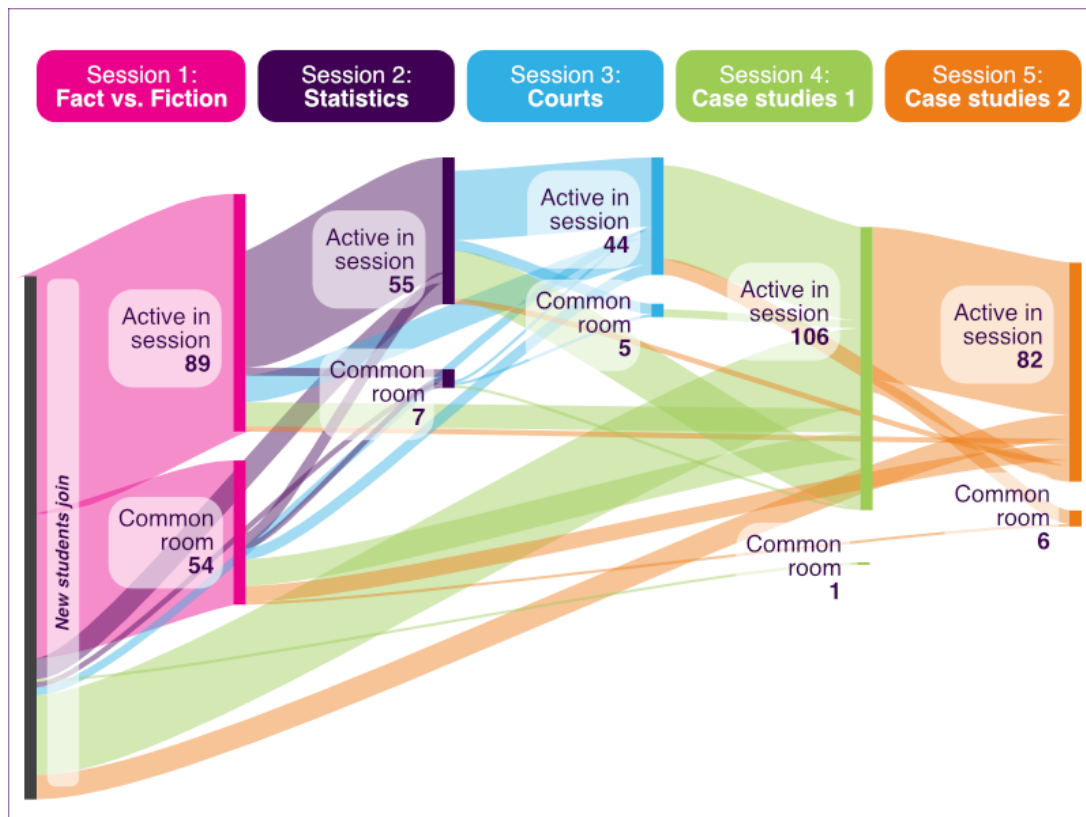
ScarlettGandAmeliaH @JackSandMillie:): yes based on the phone towers there's a person called e that seems suspicious

ZoeC @ScarlettGandAmeliaH: I agree, more investigations should have been carried out

Kirsty @ScarlettGandAmeliaH: e also never said anything till the body was found

Jack SandMillie:) @Kirsty: we think e is very suspicious because they didnt come forward till the body was almost found

Student behaviour



The graph above shows the movement of students throughout the day of the online youth summit. Focusing on the times of the planned Chat sessions student usernames were allocated one of three statuses.

Students could either be active in the planned Chat session of the day, active in the common room but not in the session, or inactive. Inactive here means the student could have been in the Chat reading the conversations but not contributing or students could have been offline during that time. It is not possible to differentiate between the two. However from looking at when they logged in, it is clear that a significant proportion of the students were logged in and lurking as opposed to not being on the site.

Outcomes/Impact

3 words about Forensic Science

Pre Summit



Post Summit



Tell us how you feel about the summit.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Average Score
I enjoyed the summit	22	33	7	3	0	4.138
I learnt something new	33	25	4	1	0	4.292
I want to find out more about the topics discussed	24	31	7	2	1	4.154
I thought each session was clearly explained	15	33	15	2	0	3.938
I found the platform easy to use	21	31	11	2	0	4.092
I managed to voice my opinion	21	33	10	1	0	4.138

Since attending the summit, my understanding of forensic science has

Increased 50 79%
Stayed the same 13 21%

My understanding of what scientists do has

Increased 51 81%
Stayed the same 12 19%

My understanding of the place of science in our lives has

Increased 40 63%
Stayed the same 23 37%

Feedback

Teacher feedback

- *I just wanted to say thank you for running a fabulous summit. The students absolutely loved it - a couple of my girls are still discussing one of the cases! We look forward to the RI lecture by Prof Dame Sue Black. I think we had about 18 students in total. It really was wonderful. Not only was it interesting and relatable, the session on stats and the video on causation/correlation was so relevant to our courses as well. The value of the event as an experience was fantastic.*

What impact do you feel the day had on your students? Were you part of any discussions with students about the day?

- *They were initially quite excited to be involved, but soon became quite disenchanted with the content. I worked with the students in the library on the day, so watched and discussed the material with them*
- *Students had an opportunity to develop a wide variety of skills whilst also applying their knowledge towards a new discipline within the scientific field. Apart from inspiring some debate early in the morning, the students had a strong level of discussion and autonomy throughout the day.*

Was the Summit worth taking students off-timetable for? Do you think a morning-only session would have worked better?

- *Not really. Yes*
- *The day did seem quite long, students commented that more practical activities would be of benefit but I feel for the theme of the session, the content was appropriate. I would perhaps pinpoint a more niche group of students for this activity in future.*

Did the content link to your teaching?

- *Not really - as we'd been teaching about biological forensic science recently, we thought it might have had more of that content in it. The phone masts and data didn't really enthral them!*
- *The content was robust and played a part in facilitating super curricular learning across multiple faculties.*

A couple of teachers told us that they felt their students were poorly prepared for the day? Do you think a pre-event task that could be completed as homework would be something you would do?

- *If the task was engaging, then yes!*
- *Preliminary resources would have been of significant benefit to help the students prepare for what was to come. I believe so, for those who have a keen interest this would be a really valuable tool.*

What did your students think of the day? Do they have any feedback that they would be happy to share?

- *Some left to go to their other A level lessons - the only ones that stayed were ones that should have been with me in A level biology! ... and they asked if I could teach them rather than continue with the day... We persevered!*
- *The students enjoyed the day but again felt it was a bit much to conduct over a full day.*

Student feedback

Student 1

- Learnt more about future prospects in forensic science
- Informative and new perspectives
- Drawn me in to considering taking biochemistry and psychology in further education
- Learned more about the reality of forensic science and how statistics can be manipulated
- Employability skills used: team work, communication, organisation, initiative, technology, resilience

Student 2 and 3

- Enjoyed taking part and learn a lot
- Especially liked the talk about misleading statistics and learnt that it's important to check the diagrams
- Employability skills used: technology, communication, initiative

Student 4

- Really enjoyed the video on statistics
- Expanded knowledge of forensic science as a career and the various roles in it
- Helped link to various subjects we study at school like psychology which links to the CSI effect
- Employability skills used: team work, technology, communication

Student 5, 6 and 7

- Great opportunity to learn more about how science applies in the real world and the law
- Learnt about misleading statistics and the CSI effect - how TV shows don't depict the reality of forensics science
- used our existing STEM knowledge throughout the day

Student 8

- Learnt a lot of new knowledge especially about the significance of science in the world today and how to get a career in forensic science

- I want to work in forensic science, so it was useful for me to identify further education pathways
- Most exciting part of the day was the ted talk about misleading statistics
- Felt the day gave me an insight into what forensic scientists do on a daily basis
- Employability skills used: communication, team work, problem solving,