



November 2019

The Electromagnetic Zone was a themed zone supported by the Science and Technology Facilities Council. There were six scientists taking part:

- Sameed Muhammed is a research scientist at CERN, studying how matter and antimatter interact with each other
- Jose Brandao-Neto works at Diamond Light Source helping researchers discover new medicinal drugs using X-rays
- Joanna Barstow, the winner of this zone, uses data from spacecraft cameras to investigate the atmospheres of planets and exoplanets
- Heidi Thiemann is an STFC funded PhD student researching how variable stars change over time
- Freya Addison is a PhD student at the National Centre for Atmospheric Science using radar data to study clouds and insects
- Chris Rink is a masters student whose group uses ISIS and Diamond to study new magnetic compounds

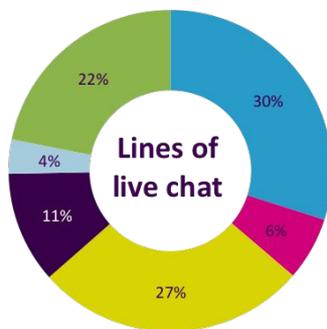
Key figures

This Zone had the highest number of students logged out of all the other *I'm a Scientist* zones in November.

It was a busy zone, with a higher than average number of questions asked and approved, and 24 live chats across the two weeks.

	ELECTRO-MAGNETIC ZONE	NOV '19 ZONES AVERAGE	2012-19 ZONES AVERAGE
Schools	13	10	10
Students logged in	555	368	389
% of students active in ASK, CHAT, VOTE, or comments	94%	91%	87%
Questions asked	803	571	659
Questions approved	361	262	291
Answers given	386	457	525
Comments	58	45	69
Votes	494	291	307
Live chats	24	18	17
Lines of live chat	7681	6334	5771
Average lines per chat	320	352	356

Scientist activity



PLACE

Joanna Barstow	1st
Sameed Muhammed	2nd
Heidi Thiemann	3rd
Jose Brandao-Neto	4th
Chris Rink	5th
Freya Addison	6th



Sameed



Jose



Joanna



Heidi

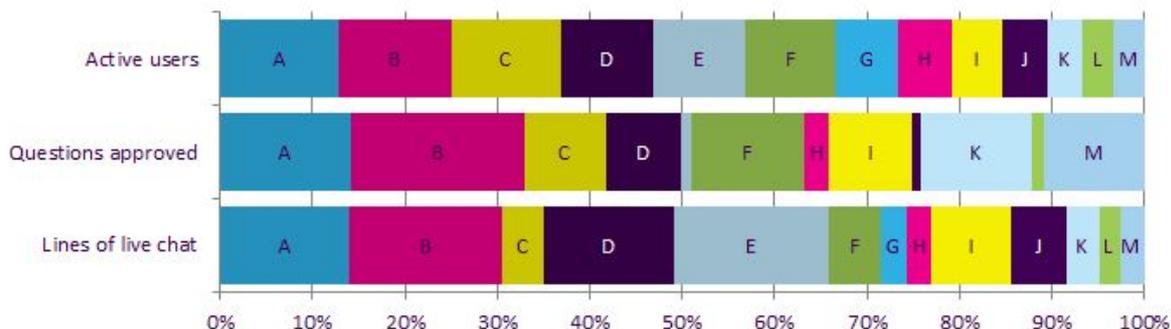


Freya



Chris

School activity



	YEAR GROUP(S)	CLASSES
A St John Wall Catholic School, Birmingham (WP)	7, 8	2
B Deptford Green School, London (WP)	9	2
C St Joseph's College, Dumfries & Galloway (U)	7	3
D The Arnewood School Academy, New Milton (U)	8	2
E Lawnswood School, Leeds (WP)	7	3
F Brockhill Park Performing Arts College, Hythe (U)	11, 12, 13	3
G Walton Girls' High School & Sixth Form, Grantham (U)	9, 12	2
H Colne Community School & College, Colchester	8	1
I Clytha Primary School, Newport (U)	6	1
J Burnside Business & Enterprise College, Wallsend (WP)	7	1
K Colegio Escandinavo, Madrid	8	1
L Kemnay Academy, Aberdeenshire (U)	8	1
M Turnbull High School, East Dunbartonshire	9	1

We have found that schools that are more than 30 minutes travel time from their closest Higher Education Institution are less likely to receive visits and benefit from engagement activities. We give priority to underserved (U) and widening participation (WP) schools when allocating places. Find out more about our research at <https://about.imascientist.org.uk/2017/school-engagement-in-stem-enrichment-effect-of-school-location/>



Sameed



Jose



Joanna



Heidi



Freya



Chris

Frequent words used in live chats by students and scientists



Question analysis



You said in your bio that you like travelling. Where is the best place you have visited and why?

Do atoms ever actually touch each other?

If you take too many gamma rays, can you get cancer because gamma rays at a high frequency will burn your cells?

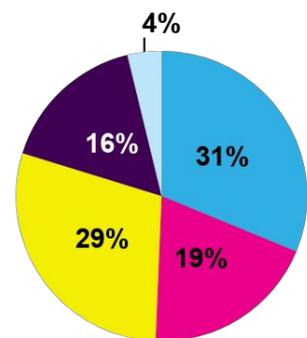
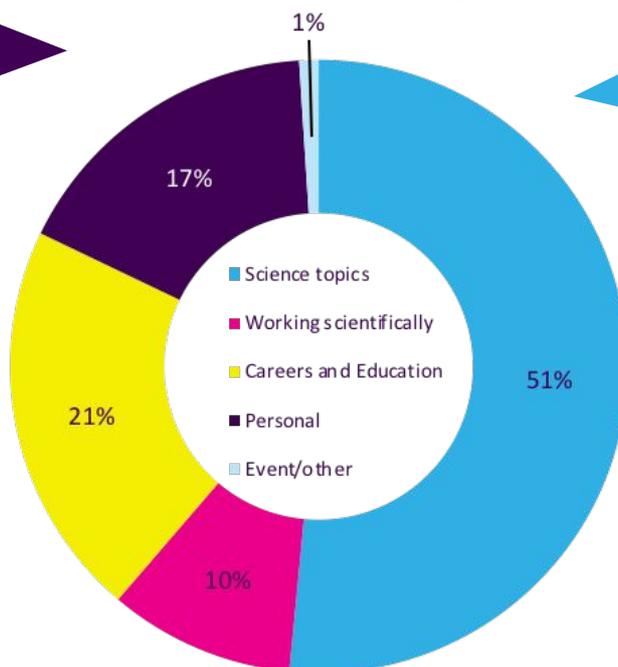
What's your favourite movie

How can our skin emit infrared light?

Is your field of work gender equal?

Are there lots of opportunities where you live for scientists?

Who disagrees with your conclusions?



Historic Per-Zone Average (Themed Zone)



Sameed



Jose



Joanna



Heidi



Freya



Chris

Examples of good engagement

Chats and ASK are an opportunity for students to ask scientists about things that interest them, and get detailed, interesting responses in reply:

*"I've heard that our galaxy was in a different part of the universe when the dinosaurs lived, is that true and how do you know?" – **Student***

*"The Universe is expanding, so it will have changed since the dinosaurs lived, yes. We know it is expanding because when something that shines is moving away very fast, the light waves coming from it get stretched out and the light looks redder. If we look at other galaxies and measure how red they look, we can tell how fast they are moving. The furthest galaxies are moving the fastest, so they look the reddest. That's how we know the Universe is expanding." – **Joanna, Scientist***

*"Also, interestingly, our sun was in a different part of our galaxy, the Milky Way, when dinosaurs lived. This is because the sun is also rotating around the center of our galaxy, so now, after many millions of years have passed, the sun is in a different place than it was before." – **Sameed, Scientist***

Scientists were honest about their jobs and open about things going wrong. This helps to dispel stereotypes of scientists and helps students to see them as normal people, like them. In this example Joanna and Freya discuss how outside influences can cause things to go wrong, and that they also make mistakes themselves:

*"What are the negatives in your scientific area of work?" - **Student***

*"I do a lot of my work on a computer, and sometimes it doesn't work as well as I would like!" – **Joanna, Scientist***

"Similar to Joanna, when things don't work. Programming is a core element to my work and it's frustrating when you have written a 500 lines of code and then it doesn't run because you put in a semi-colon where there ought to be a colon on line 343. Or the file you are working on doesn't have any metadata – essentially the column names for all the numbers in the dataset. Or when you have accidentally set an infinite loop, so your code runs forever!

*Another problem is "fake news". A colleague recently published a paper and a news outlet picked up and created this sensationalist headline which took their work completely out of context. Scientists can be stereotyped as poor communicators but that is actually a major part of our job to distil what we learnt in different ways to share with people. We are always looking at ways we can improve on this but it can be difficult to be taken seriously when things are taken out of context or in the wrong way." – **Freya, Scientist***



Sameed



Jose



Joanna



Heidi



Freya



Chris



Scientist winner: Joanna Barstow

Joanna's plans for the prize money: *"I would use the money to develop the 'exoplanet lab' - an online platform hosting resources for schools to teach key skills, using real exoplanet observations."*

Read Joanna's [thank you message](#)

Student winner: ILikeQuantumPhysics

As the student winner, ILikeQuantumPhysics will receive a certificate and a gift voucher.

Feedback

We're still collecting feedback from teachers, students and scientists but here are a few of the comments made about November's *I'm a Scientist*...



Clytha Primary
@ClythaPrimary

Y5 engaging with real scientists online in a live chat through the 'I'm a Scientist' competition. They will be speaking with scientists throughout the week and voting for their favourites. Great questions from our children too- "how do black holes form?"

[@imascientist](#) [@EAS_STEM](#)

Both classes absolutely loved taking part and my class actually clap at the end of the live chat...This project encourages a greater understanding and interest in science. Pupils see scientists as real people with interests like their own. It breaks down the stereotypes around the career. Taking part also encourages the pupils to think about the world of work and future careers.

— Teacher

We had our first live chat today and the students loved it!! It was so lovely to see them so engaged with the live chat and some of their questions were fab!

— Teacher

I'm a Scientist has changed my perspective on science

— Student

I particularly enjoyed the live chats with classes because the engagement was totally led by them and it was a lot of fun to chat about such a variety of things, from being a researcher, to their questions about dementia, to our favourite snacks, to Netflix - I'll miss doing them a lot! And, in chats, there were some questions that came up frequently, which has given me a better idea of some of the concerns/questions of younger people.

— Scientist



Freya I Addison
@STEMwithFreya

Been really enjoying [@imascientist](#) The pupils have asked some fantastic questions. Definitely recommend signing up. I haven't done outreach in a while so it's good to do some engagement and show there are many different aspects of science and paths leading to. [#STEM](#) [#scicomm](#)

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