

October 2022

The Plastic Zone (plastic22.imascientist.org.uk) ran from 26 September to 21 October and was funded by the Royal Society of Chemistry and UKRI.

The Zone featured **25 scientists** working on plastic and polymers creation, re-use, and management.

They connected with **851 students** from across the UK. **775 students** (91%) actively participated by writing Chat lines and asking follow-up questions.

Key activity figures

	Zone
Students logged in	851
% students active	91%
Schools	26
Scientists	25
Live Chats booked	75
Live Chats occurred	44
Lines of live Chat	15,148
Average lines per live Chat	344
Questions asked	455
Questions approved	267
Answers given	337
Scientist comments	18
Student comments	10
Votes	424

Who took part?

Students from 26 schools across the UK logged into the Zone.

Impressively, 94% of active students were from priority schools: 48% from underserved schools and 51% from widening participation schools.

A total of 424 votes were cast by students. The winning scientist with the most student votes was **Dan Day**, Postdoctoral Research Associate at University of York.

Activity

75 live Chats were booked. 44 took place.

Of the remaining 31 Chats booked, 23 were cancelled and in 8 the school did not attend and did not give notice. All schools were chased and invited to rebook.

There were 2 live Chats where the teacher asked questions on behalf of their students. It is also common for students to share login details or computers during live Chats. Therefore, the number of students engaged will be higher.

Students asked 455 follow-up questions of which 267 were approved and 152 were duplicates.

School activity

Students from 26 schools across the UK participated in the Zone.

School	Students logged in	Active users	Chats attended	Chat lines (total)	Chat lines (per user)	Questions approved	Votes
Reading Girls' School, Reading (WP)	110	102	3	1,790	18	75	66
Hornsey School for Girls, London (WP)	94	91	4	1,626	18	56	39
Litcham School, King's Lynn (U)	55	52	2	788	15	1	25
Llanyrafon Primary School, Torfaen (U)	50	51	2	820	16	4	45
Winstanley College, Wigan (U)	56	50	4	184	4	0	17
Queen Elizabeth's Girls' School, Barnet (WP)	58	46	3	256	6	3	26
St Dominic's High School, Belfast (WP)	44	44	2	610	14	8	0
Ark Soane Academy, London (WP)	40	41	2	522	13	1	34
YGG Pontardawe, Abertawe (U)	37	37	1	790	21	3	30
Widnes and Runcorn Sixth Form College, Widnes (U)	37	32	2	112	4	24	33
Tewkesbury School, Tewkesbury (U)	37	30	2	186	6	6	0
St Bridget's Primary School & Nursery Class, Glasgow City (WP)	29	29	1	373	13	53	27
Sir Harry Smith Community College, Peterborough (U)	29	28	3	187	7	3	5
Twynham School, Christchurch (U)	27	27	1	334	12	12	2

Exeter College, Exeter	24	25	2	120	5	11	24
John F Kennedy Catholic School, Hemel Hempstead (U)	25	25	1	364	15	5	23
Furness Academy, Barrow-in-Furness (WP/U)	17	18	1	289	16	1	0
Colton Hills Community School, Wolverhampton (WP/U)	19	18	1	106	6	0	6
New College Swindon, Swindon (U)	15	16	2	132	8	0	9
Sandhurst School, Sandhurst	17	15	1	51	3	0	1
Litherland High School, Liverpool (WP)	10	11	1	122	11	1	11
Employability Solutions Independent School, Liverpool (1)	7	7	1	119	17	0	1
Our Lady of Lincoln Catholic Primary School* (WP)	0	1	1	15	15	0	0
Liverpool College, Liverpool*	0	1	1	20	20	0	0

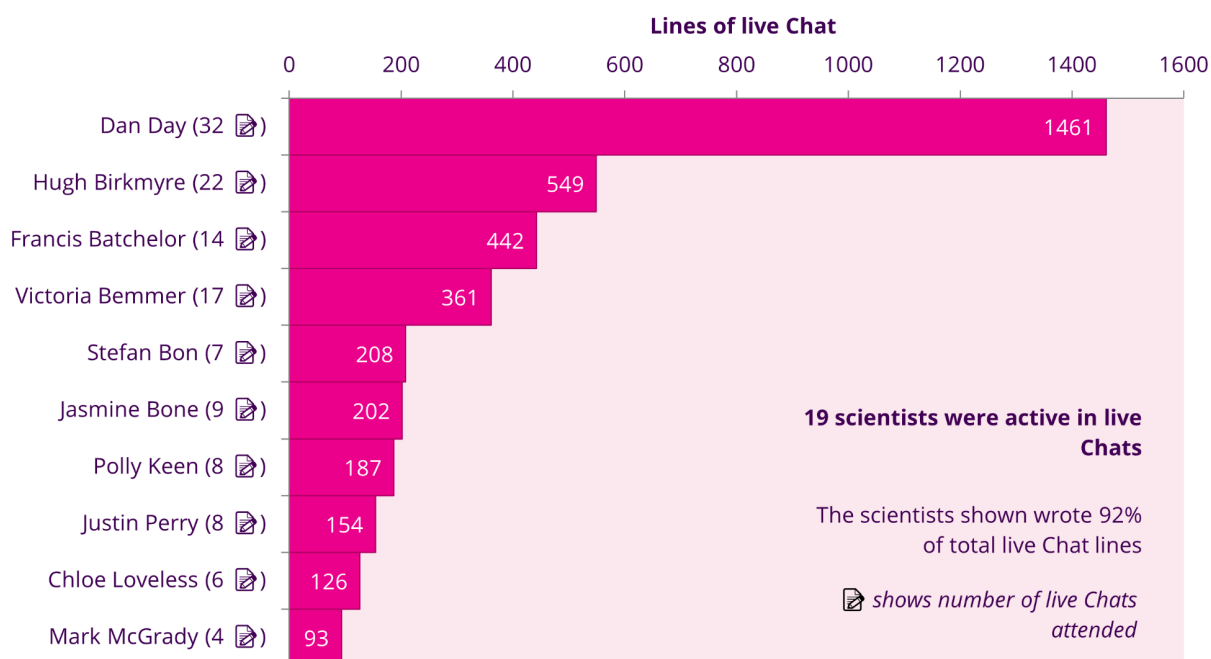
* In these chats teachers typed questions on behalf of their students, with the chat displayed on a screen.

We want to increase the participation of under-represented groups. Find out what we mean by under-served (U) and widening participation (WP) schools, and how you can support us in working with more of these: about.imascientist.org.uk/under-served-and-wp

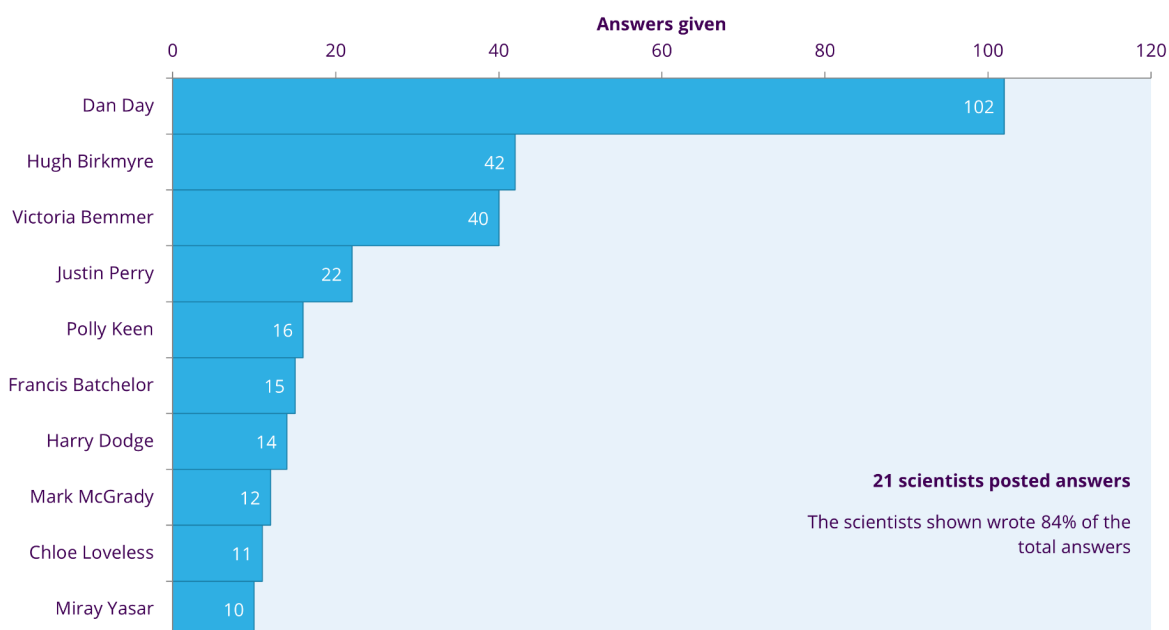
Scientist activity

During the Zone the scientists interacted with students by writing 4,130 lines of live Chat, and providing 337 answers to 268 posted questions. On average, 3 scientists took part in each live Chat.

10 most active scientists in live Chats

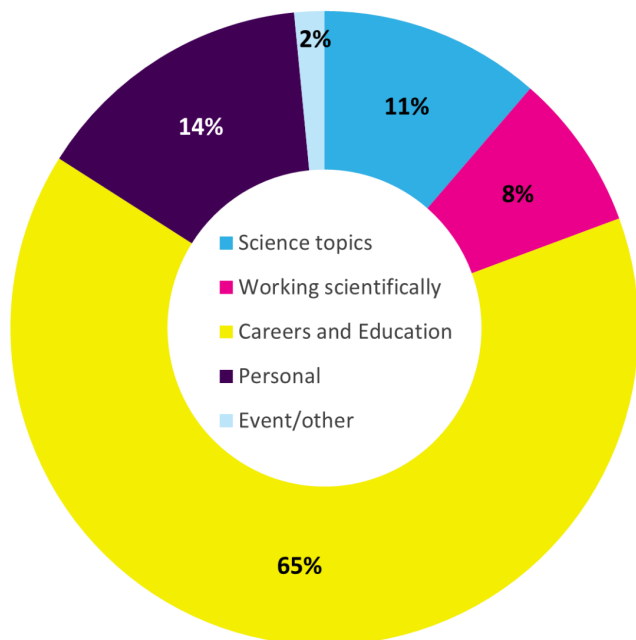


10 most active scientists in posting answers



Questions in Ask section

The chart below shows an analysis of questions students sent to the scientists. Questions are coded into overarching categories. The examples are coloured by category.



Do plants make good and useful plastics?

Why is plastic not biodegradable?

How are polymer pellets used to make film?

Why does this study matter?

As a researcher, what do you have to do everyday in your job role?

Have you always been into science?

What universities did you go to and which would you recommend for future scientists?

What's your favourite place you have travelled to?

Good engagement

Asking questions they find interesting and relatable is important to support students' science capital¹ and makes them more likely to see science as something 'for them'. These interactions are especially helpful for students to see science as relevant.

Student 1: What will have the biggest impact: general public changing plastic use or industry changing use?

Dan (scientist): Great question! I think in the short term, we as consumers can have a massive impact by reusing as much as possible and recycling if necessary. More legislation is hopefully on the way to change industrial attitudes to plastics but this might be in the long term

Francis (scientist): In industry, all your usage is in the same place, so you can gather waste/used product easily. Out in the public, plastic gets used all over the place

¹ about.imascientist.org.uk/student-impact

Student 1: What major breakthroughs have you had this year?

Stefan (scientist): (1) We discovered a material that acts like plastic, but is made from natural small molecules. (2) We made a sticker that does not need a backing liner/paper. It only sticks when you want it to stick.

Student 2: the 2nd sounds really cool

Stefan (scientist): Yes, we are happy with it. It uses less material, and it does not need a silicone as a release plastic.

Student 3: Why is that useful?

Stefan (scientist): Plastics have some amazing properties that are hard to get with other materials. It would be great if some of these properties can be mimicked with other materials.

Student 4: When will the material be released to the public?

Stefan (scientist): Typically we are in the discovery stage. For things to become commercial in this area, takes roughly 5 years. We are working with a big global producer to push this forward.

Information and advice about scientists' careers can show students the range of possibilities for working in science and what they need to do to get there.

Student 1: What key qualities do scientists need?

Karina (scientist): I would say that some really important qualities are natural curiosity, attention to details and having an open mind.

Student 1: What inspired you to be the scientist you are today?

Aisha (scientist): As a child I was always thinking about how things work but as I grew older I realised that actually people have built all these stuff and I can also do that. That is what got me moving towards STEM

Student 1: That is very intriguing, it makes me think about that too!

Aisha (scientist): Totally agree! Trying to figure out working principles of anything is always cool.

I developed a liking for photonics sensing during my masters. The idea of detecting particles invisible to eyes using light is very interesting and that is what I am working on.

Student 1: That is awesome!

Student 2: I agree

Subject specific questions are great to generate interest in the subject area and build on existing knowledge.

Student 1: What is plastic made up of?

Hugh (scientist): Plastic is made up of building blocks called monomers. It's like a LEGO kit, except they are all in a line, not on top of each other.

Student 1: What will replace plastic/What is a better alternative?

Dan (scientist): Plastic is very useful for loads of different applications where no other material would be suitable. But there are many environmental issues with them. So I think they will be replaced with greener alternatives.

Hugh (scientist): Depends what you need it for. Sometimes paper, card or bamboo is better, but sometimes plastic is the best option - just don't throw it away so it causes pollution!

Victoria (scientist): I don't think we'll ever replace plastic - they're too useful! I think we'll find versions that are more readily recyclable, and move to more circular usage of them, rather than using once and sending to landfill

Conversations like this are great to build a rapport between the scientists and students. It encourages students to see scientists as "normal" people with interests and hobbies.

Student 1: Do you support a football team?

Francis (scientist): Spurs & Celtic

Student 1: Must've been tough watching the UTD game

Francis (scientist): Terrible performance. Its big ups and downs this year, more ups at the moment though

Student 1: I'm an IFC fan, so I can't say I'm too happy about how we're doing

Francis (scientist): Yes, need to hope for a world cup reset for you and kick on well 2nd half of season

Student 1: Hope so. Who do you think is gonna win the world cup

Francis (scientist): Brazillians always solid bet when it's hosted out of Europe. Going to be a very unique one.

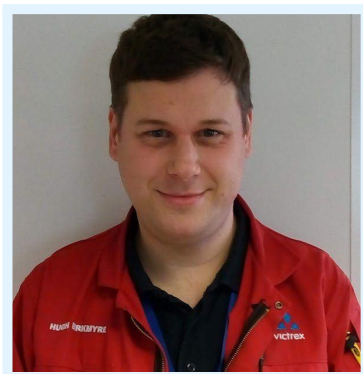
Student 1: Will be a fun watch. Have you ever thought about a career outside of science?

Francis (scientist): I would think about something that involved making or fixing things, like cars or furniture

Scientist of the Week

Students voted each week for their favourite scientist to be named Scientist of the Week.

The Scientists of the Week were:



Hugh Birkmyre, Scientist at Victrex



Polly Keen, Chemical Engineer at Xampla

Scientist Winner

The overall winner, with the most votes at the end of the Zone was:

- **Dan Day**, Postdoctoral Research Associate at University of York

As Zone winner, they receive £500 to spend on further public engagement projects.



"I'll be honest, I was a little bit sceptical about how effective *I'm a Scientist* would be, but I have been so impressed with it. The questions have been amazing – I met year 7s who knew more about sustainability than I did when I was 25! It has been really energising to see the next generation take such an interest in science, and I hope some of you will consider it as an option going forward."

You can read their full statement at <https://ias.im/466.747>

Feedback

Thank you so much. It's been really inspiring for our children.

Teacher

Thank you for helping me understand more about science

Student

Thank you this was really fun to do! Thank you for answering all my questions it was really interesting!

Student

It was great to be doing this in my lunchtime but with groups of young people all around the country and from a range of backgrounds

Justin (scientist)

We have managed over the last few weeks to have all our year 7 and year 8 classes involved in virtual chats with scientists which is fabulous, and we are very grateful for your support in getting our students communicating with professionals.

Teacher



Llanyrafon Primary
@LlanyPrimary

Year 6 totally engaged and excited about their live chat with 'I'm a scientist get me out of here' Plastic zone - Topic rich learning - Ambitious, capable and very happy learners 🌟
[@imascientist](#)

Thank you, I learnt interesting things

Student