Ri CHRISTMAS LECTURES 2023:

The truth about AI

AI Zone: January to February 2024

The AI Zone (ai24.imascientist.org.uk) ran from 8 January to 9 February 2024 and was commissioned by The Royal Institution.

Key activity figures

Students logged in	714
Students active	88%
Schools	23
Scientists given access	38
Scientists active	36
Chats booked	52
Chats took place	40
Lines of Chat	8,871
Average lines per Chat	222
Follow up questions asked	115
Follow up questions approved	108
Answers given to follow up questions	331
Scientist comments	41
Student comments	3
Votes	354

Who took part?

The Zone featured 36 scientists working with AI and machine learning in applications of satellite communications, gaming and business innovation. Their research areas covered human biology, human-machine interaction and digital disinformation. They connected with 714 students from across the UK. 628 students (88%) actively participated by writing Chat lines and asking follow up questions.

79% of active students were from priority schools.

A total of 354 votes were cast by students. The winning scientist with the most student votes was **Fraser Smith**, who researches the intelligence of the human brain using machine learning techniques.

Activity

52 Chats were booked, 40 took place. Of the remaining Chats booked 11 were cancelled and in 1 the school did not attend and did not give notice.

It is common for students to share login details or computers during Chats. Therefore, the number of students engaged is expected to be higher.

Students asked 115 follow up questions of which 108 were approved and sent to scientists. Duplicate questions (that scientists had already answered) were not sent again, with the student being directed to the previous answer and invited to comment and ask additional questions.

School activity

School	Students logged in	Active users	Chats attended	Chat lines (total)	Chat lines (per user)	Follow up questions approved	Votes
Livingstone Academy Bournemouth, Bournemouth, Christchurch and Poole [WP-Q3 D]	128	118	5	881	7	16	60
St Mary's Church of England Middle School, Puddletown, Dorset [WP-Q3 D]	106	105	4	982	9	31	99
Liverpool College, Liverpool	96	94	4	730	8	5	42
Loughborough College, Leicestershire [WP*]	95	64	5	213	3	10	17
Mulberry School for Girls, Tower Hamlets [WP-Q5]	84	78	5	1,060	14	11	40
King Edward VI Aston School, Birmingham	29	26	1	265	10	4	18
Old Buckenham Primary School, Norfolk [WP-Q2 D]	29	19	-	-	-	1	-
Ysgol Uwchradd Tywyn, Gwynedd [D]	25	25	1	276	11	2	22
Peterhead Academy, Aberdeenshire [WP-Q2 D]	23	21	1	133	6	2	12
Carterton Community College, Oxfordshire [WP-Q2 D]	22	14	1	55	4	4	3
The Holmesdale School, Kent [WP-Q4 D]	19	17	1	179	11	13	9
Queen Anne High School, Fife [WP-Q3 D]	14	11	1	171	16	-	10
Noel-Baker Academy, Derby [WP-Q5]	11	10	1	116	12	2	9
West Calder High School, West Lothian	8	7	1	60	9	-	-
Eastwood High School, East Renfrewshire	7	6	1	50	8	6	5
Greater Peterborough UTC, Peterborough [WP-Q4 D]	6	5	1	41	8	-	3
Weston College, North Somerset [WP* D]	4	4	1	31	8	1	4
Woodchurch High School, Wirral [WP-Q4]	4	3	1	37	12	-	-
Elysium Healthcare Potters Bar Clinic School, Hertfordshire [WP*]	3	3	1	32	11	-	-
Seymour Road Academy, Manchester [WP-Q5] *	1	1	1	16	16	-	1

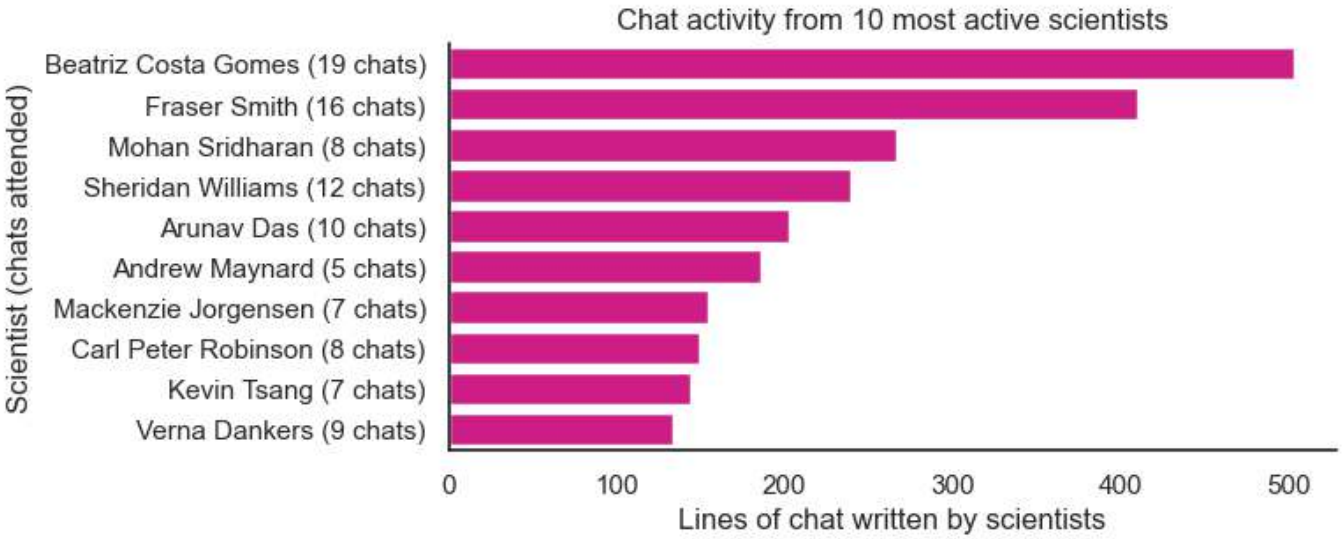
School	Students logged in	Active users	Chats attended	Chat lines (total)	Chat lines (per user)	Follow up questions approved	Votes
Our Lady Of Peace Primary School, Renfrewshire [WP-Q4] *	-	-	1	16	-	-	-
Silver Bridge School, Somerset [WP* D] *	-	-	1	26	-	-	-
Willowdown Primary School, Somerset [WP-Q4 D] *	-	-	1	22	-	-	-

We want to increase the participation of under-represented groups. WP-Q indicates the level of economic deprivation in a school's catchment area: Q5 represents a high level. WP* indicates FE colleges, SEND schools, and other priority schools. D shows schools that are more than 30 minutes from a large research HEI. Find out more, and how you can support us in working with more of these schools: **about.imascientist.org.uk/under-served-and-wp**

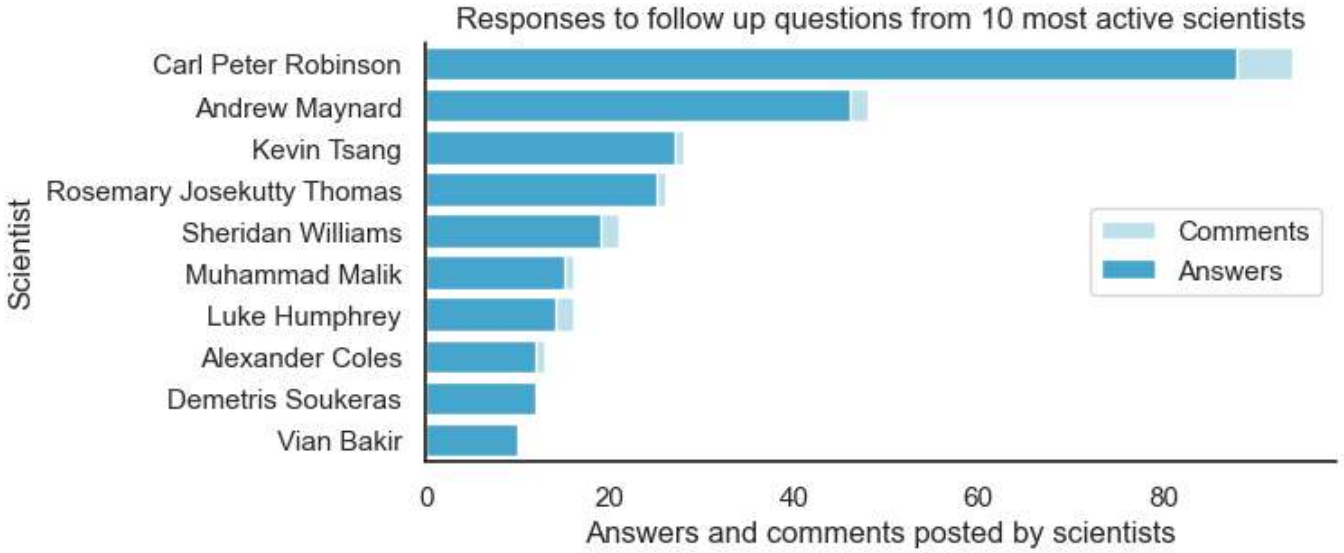
*These schools ran Chat sessions where students' questions were asked through the teachers' accounts.

Scientist activity

During the Zone the scientists interacted with students by writing 3,414 lines of Chat, and providing 331 answers to 108 follow up questions. On average, 3 scientists took part in each Chat.



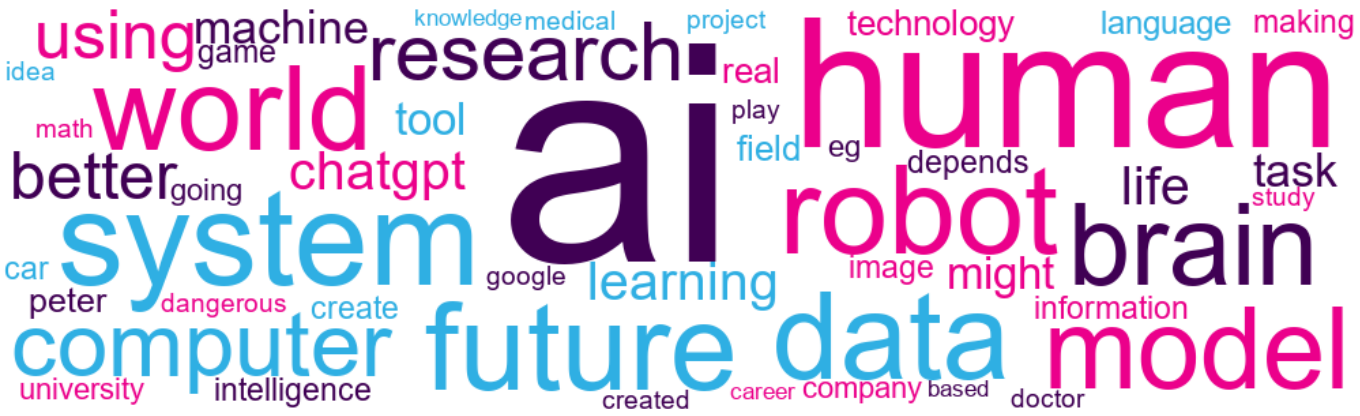
The scientists shown wrote 70% of the lines of chat in the zone.
The average scientist attended 6 chats, and wrote 122 lines.



The scientists shown posted 81% of the answers, and 76% of the comments in the zone.
The average scientist posted 12 answers, and 1 comments.

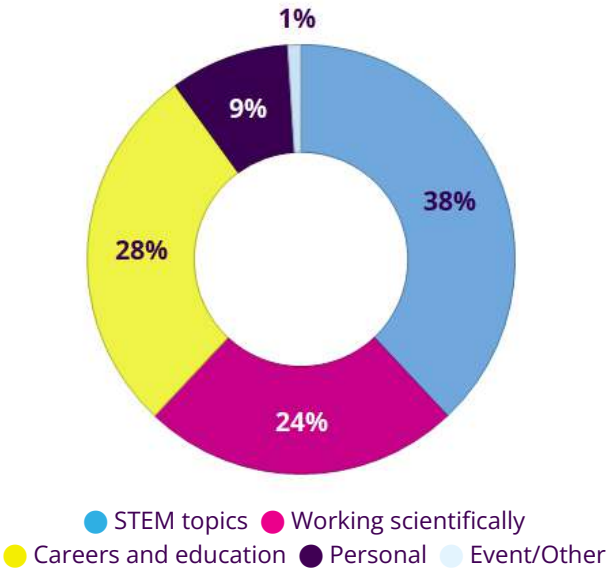
Chats

The word cloud below demonstrates what students and scientists talked about in Chats. The bigger the word, the more frequently it was used.



Follow up questions

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.



What is done with all the information that is being fed into AI through ChatGPT for example?
How is AI being used in the bioscience field?
Can AI be used in developing countries at the same level it is used in first world countries?
How do you think AI is going to change the planet?
What is the most innovative thing about your research you've done?
How did you get into this job?
What jobs use AI the most?
Do you like any sports?

Examples of good engagement

Exchanges about careers in AI and what they entail allow students to learn about the diverse range of tasks and career paths in this field. This can help them see STEM as something for them.

Student: What do you do with AI and do you use it in your personal life?

> **Alexander (scientist)**: I use AI for cancer research. In my personal life I like to play with Chat GPT and get it to write stories
>
> > **Student:** How helpful is it in the research for cancer. Is it the main researcher or do humans do most of the work?
> >
> > > **Alexander (scientist)**: AI is being used by a minority in medicine. Certainly most of the hard work is being done by doctors and chemists. But even a small number of AI researchers can have a great impact on the fields as models can generalise to large groups.

The interaction between scientist and student highlights the transferability of scientific skills and knowledge. Students discover the broader applications of AI and how it can be connected to another scientific field that interests them, such as biosciences.

Student: How can AI be used in biosciences in general

> **Bea (scientist)**: This is a great question! It can be used in many different ways: to study DNA or proteins, to study all sorts of images, it can also be used to try and simulate any biological system!
>
> > **Student:** That's really cool! How efficient is AI at studying DNA, proteins and other images at this point?
> >
> > > **Bea (scientist)**: It's quite good, actually! we're managing to process so much data in such a short amount of time compared to non-AI methods that it actually improves and helps enhance the field

Specific questions about AI reflect an interest in Scientific Literacy. Students can learn something new about relevant science topics by taking part in the activity and asking the questions that interest them.

Student: Hey how can AI have a bias on people they don't have their own personality so how?

Madeleine (scientist): Very good point! AI itself can't have bias, you're right, it can just replicate the biases we give it. For example, a machine learning system can learn from data we give it to make decisions on individuals.

The exchanges can challenge the stereotype that scientists are exceptionally clever and only a select few can pursue a career in STEM. By empathising that everyone can be a scientist, the scientists can motivate students to engage with science.

Student: How can I be a scientist?

Bea (scientist): A scientist is someone who asks questions and tries to find the answers... so you can be a scientist at any age! Now, to become a paid scientist it involves a bit more studying and going through formal education... but nothing stops anyone from asking and answering questions!

Termly winner

The first winner, with the most votes at the end of first term in 2024 was Fraser Smith, who researches the intelligence of the human brain using machine learning techniques.

As termly winner, he receives £500 to spend on further public engagement projects.

"I have really enjoyed chatting with the pupils from across various year groups and their teachers. The questions they asked were on the mark and ranged broadly from the history of AI to the current frontiers (for instance, the possibility of emotion or consciousness in AI systems).

The experience has also helped me consider my research and AI afresh from different perspectives – which is always a good thing to do. Overall, it has been a very worthwhile experience!"

You can read his full statement here

Feedback

"Thank you to all participants from Noel Baker Lead Academy. We have all enjoyed this live chat and learnt loads!"

Teacher

"Thank you for talking with us. This was a fun experience :)"

Student

"That's what I love about these chats -- more challenging than most professional meetings I'm at :)"

Andrew (Scientist)

"The chats have been very enjoyable for me. Look forward to engaging more."

Kevin (Scientist)

"You were so helpful in answering the questions. Your responses definitely educated us a lot and thank you"

Student

"Thanks I love knowing more about these jobs!!"

Student

Funding partners

The AI Zone was commissioned by The Royal Institution, with support and sponsorship from CGI and UK Research and Innovation.