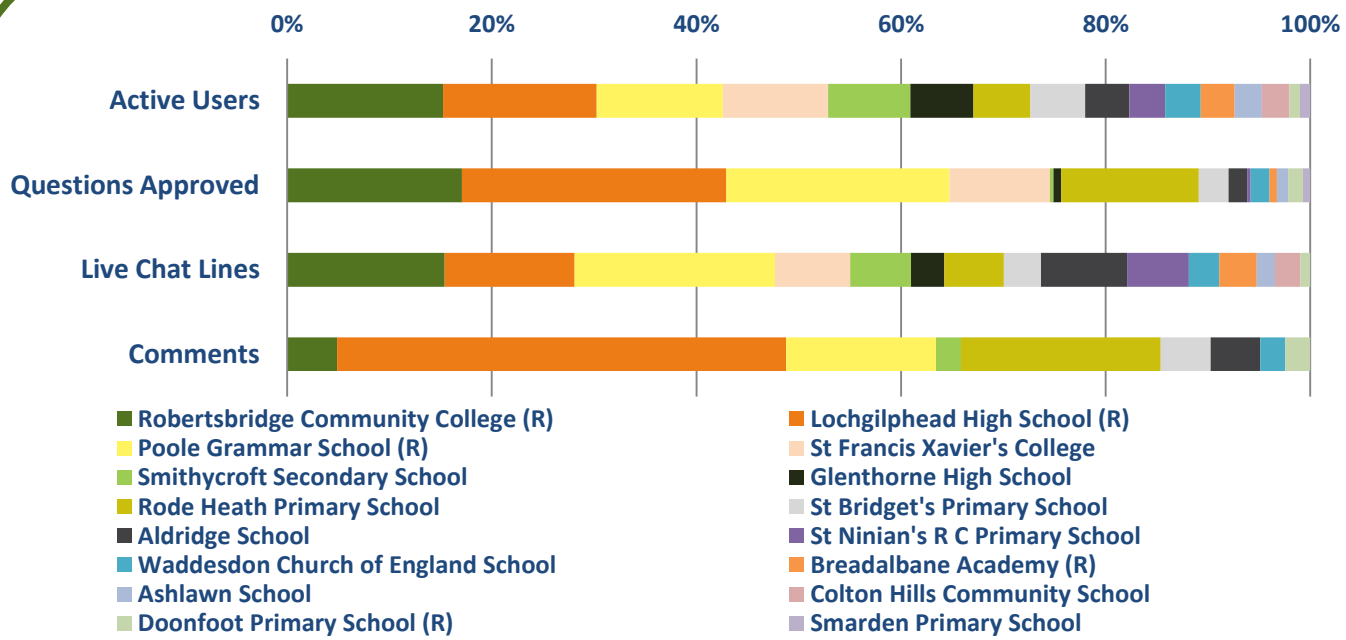
March 2017

The Ampere Zone was a general engineering zone funded by the Royal Academy of Engineering. Zoe is a civil engineer ensuring the water from our taps is safe to drink and that wastewater from households is dealt with safely, Sheryl is working to help academics at her university use technology to develop their teaching and Shahil is a project engineer building wind farms in Africa. Emma, the winner of the Ampere Zone, is a research engineer who 3D prints spaceships, satellites and armoured fighting vehicles out of metal, Andy is a Railway Engineer designing systems to drive trains automatically and Andrés is a PhD student studying new smart and flexible wings for aeroplanes.

The discussions in Ampere were varied in the topics and nature; some were factual and some more philosophical. Students were particularly interested in finding out about the careers of the engineers and what they need to do to follow a similar path. It was also a ground for sharing personal experiences and interests.

The zone had the highest number of schools taking part out of all the March *I'm an Engineer* zones. All of the engineers engaged well throughout the event, with Emma, Andrés and Andy especially active.

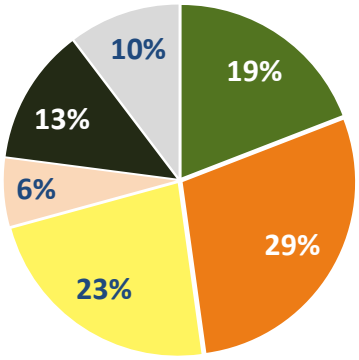
School data at a glance



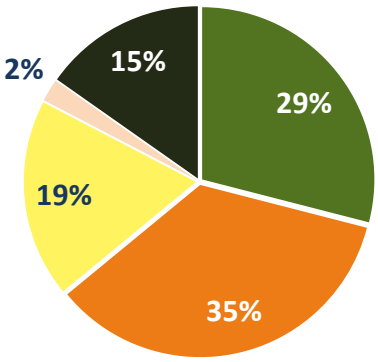
We want to increase the participation of under-represented groups going into STEM careers. Find out what we mean by our Widening Participation (WP) and Rural (R) schools, and how you can support us in working with more of these at about.imascientist.org.uk/widening-participation.

Engineer activity

Answers



Lines of Live Chat



Engineer	Profile views	Position
Emma Ryan	968	Winner
Andrés Rivero	612	2nd
Andy Woods	523	3rd
Shahil Juggernath	584	4th
Sheryl Williams	516	5th
Zoe Lonsdale	498	6th

Key figures from the Ampere Zone and the averages of the March zones

PAGE VIEWS	AMPERE ZONE	MAR '17 ZONES AVERAGE
Total zone	22,136	23,927
ASK page	1,610	2,096
CHAT page	2,413	2,229
VOTE page	2,088	1,825

	AMPERE ZONE	MAR '17 ZONES AVERAGE	IAE AVERAGE
Schools	16	14	10
Students logged in	573	539	396
% of students active in ASK, CHAT or VOTE	85%	85%	85%
Questions asked	621	830	605
Questions approved	275	296	223
Answers given	523	657	449
Comments	50	72	44
Votes	411	342	298
Live chats	22	20	17
Lines of live chat	10,038	7,895	5,342
Average lines per live chat	456	401	307

Popular topics

Students wanted to know how to become an engineer, from the subjects to take at school, through work experiences and apprenticeships, to what employers look for. They were also curious about the type of person that makes a good engineer. Within this theme, students showed their perception of an engineer as someone who makes or builds things, and wanted to know what the participants have made or are making currently.

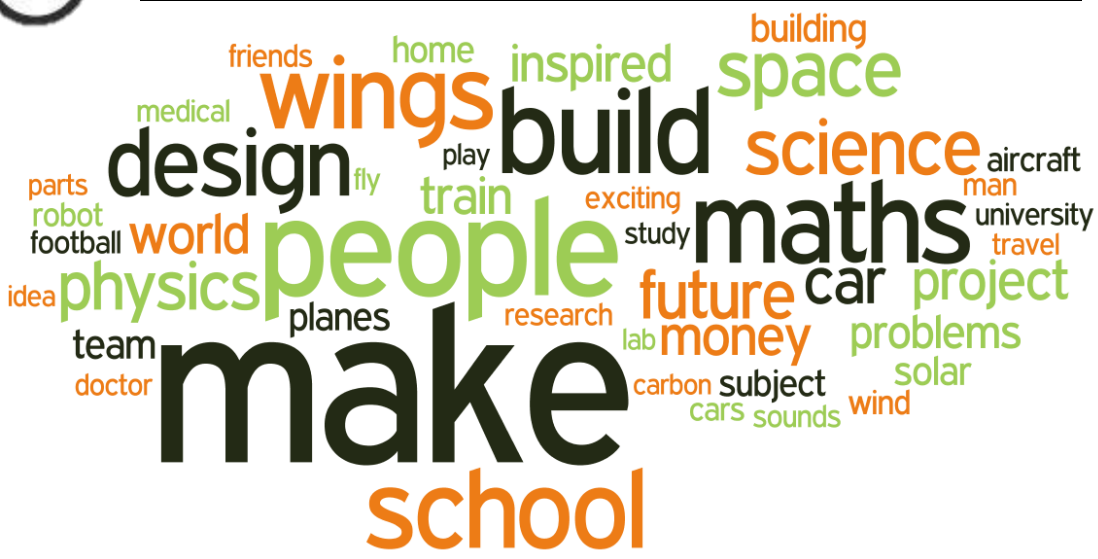
It was evident the students had read the engineers' profiles as many questions reflected their areas of work. For example, aeroplanes were a popular topic, with students interested in Andrés' work on wings; why they are built in the shape that they are and the types of aircraft he works with. Students asked Emma about 3D printers and how she can make such big things with it, and Andy about different types of trains.

There was some interest about women in engineering, with questions in both ASK and the chats on why more girls should become engineers and comments about how the students find the work of Emma, Sheryl and Zoe an inspiration.

Students and engineers found common ground by talking about their personal lives and interests. Students connected particularly well with Emma's interests: Lego and Harry Potter. They also asked Andrés about the differences between his home country and the UK, and Shahil about his experiences living in Africa.

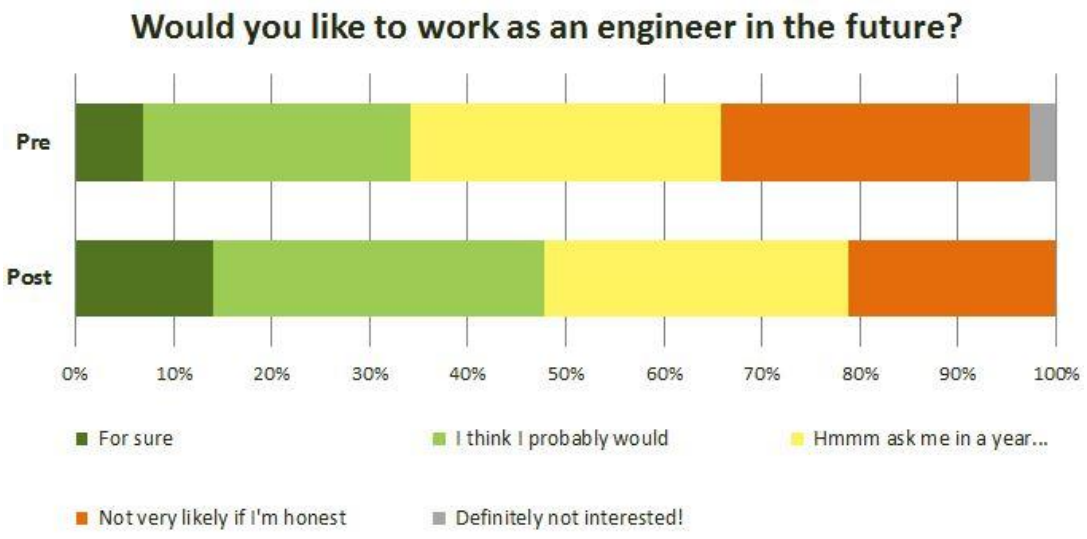
Chat

Keywords from live chats in the zone, size of the word represents its popularity



Students' attitudes to STEM

We ask students directly about how they feel about STEM, before and after taking part in the event. It's clear that participating in I'm an Engineer has an overall positive effect on students' attitudes to STEM:



Figures are averages from *I'm an Engineer* Zones run between November 2014 and June 2015. We're still collecting feedback for March 2017, but expect to see a similar positive change.

Ask ?

Keywords of questions approved in the zone, length of bar represents frequency of use

Example Questions (click for links)

"Why do planes with good radar still fly into things?"	"What aspects of school have you used in your job?"
"How much electricity does it take to build each individual wind turbine?"	"What is the hardest thing you have built?"
"What is the most useful object that you use in your designs?"	"What is the surface area of the moon?"
"What would happen if you dropped a ball out of a window of a train?"	"How can you make such big things with 3D printers?"
"How could you improve on your projects?"	"Are engineers allowed to have fun at work?"
"Why should I be part of your profession?"	"Why do your ears hurt when you're landing or taking off in a plane?"

Examples of good engagement

Often in the live chats there would be conversations about different career paths. Students would ask for advice on how to decide what to do, and all the engineers were great at giving clear, practical advice:

> *"What would be the best way to find out what job/career you would want when you grow up?"***– Student**
>
> *"Maybe try work experience? Also have a look at websites for the different institutions who have loads of information. Also the national careers service."* – **Andy, engineer**
>
> *"Think about what you like to do. Favourite subjects? Favourite extracurricular activity? Also think about where would you like to end? Any dream job?"* – **Andres, engineer**
>
> *"My favourite subjects are music and biology, I want a creative job but also wanted medicine too."* – **Student**
>
> *"Think about what you like doing and search about it on the internet or ask teachers if they know anyone who does it so you can talk with them. Do you like maths and challenges, programming, designing things?"* – **Sheryl, engineer**
>
> *"I HATE MATHS, I don't mind designing and I'm determined to a challenge sometimes."* – **Student**
>
> *"No problem, it might be that you haven't given yourself the chance to be good at it. So I suggest that you try working out the problems several times and if you understand a topic explain it to others and this will help build your confidence"* – **Sheryl, engineer**

Engineer winner: Emma Ryan

Emma's plans for the prize money: "*I would buy lots of Lego. Lego is a lot like additive manufacturing; you build it up in layers. Additive manufacturing is faster than traditional methods of making things, especially if they have a complicated shape, and creates less waste material? I plan to use Lego, and you guys, to prove that*." Read Emma's **thank you message.**

Student winner: Kizzy

For great engagement during the event, this student will receive a gift voucher and a certificate.

Feedback

We're still collecting feedback from teachers, students and engineers but here are a few of the comments made during the event…

"It gives us the opportunity to reach out to a lot more students at the same time without travelling." **– Engineer**

"There was a whoop of excitement whenever someone had their question answered. Everyone was very engaged during the half hour and all agreed that it was a very worthwhile activity to take part in and they would recommend it." – **Teacher**