I'm a Scientist Get me out of here

A science dialogue event for schools,
developed by Gallomanor and funded by the Wellcome Trust

Students engage with real scientists and learn about real science

Evaluation Summary on Pilot Event

Scientists

"I think it engaged the kids in a way I've never seen before."

"I am now excited about my work again! I also FINALLY managed to explain my work to my Dad in a way that he understood!"

Students

"Really great fun some new info to add to our ever growing brains =]"

"It gave you an insight into what being a scientist is really like."

Teachers

"The pupils were looking forward to their science lessons, asking about them in the corridor etc."

"It has got [students] to see that things aren't black and white."

"...realisation that [scientists] are real people with lives, interests and senses of humour."

"They didn't seem to think of it as work."

"It was an eye-opener for me that you can teach like that and trust them to find things out for themselves."

"It really promoted higher thinking skills."

Gallomanor
creating community conversations

wellcome trust

One-page Summary

I'm a Scientist, Get me out of Here! is a science dialogue event where school students talk to real scientists online and vote for the one they want to get a prize of £500.

The pilot event was kindly funded through a People Awards grant from The Wellcome Trust.

Headline statistics

Dates	16th – 27th June 2008
Classes	40
Registered users	851
Questions asked	1,288
Log ins	2,882
Page views	80,091
Total visits	5,124 visits by 2,675 unique visitors
Average visit	15.63 pages viewed during 14:27 minutes on the site

Students said: "i learnt loads and feel much more confident to put my hand up and ask questions and know that ok sometimes i will get it wrong"

Teachers said: "The pupils were looking forward to their science lessons, asking about them in the corridor etc."

Scientists said: "It engaged the kids in a way I've never seen before."

Every scientist and teacher surveyed said they would recommend it to a colleague.

Key Outcomes

- Students realised scientists are real, interesting, fun people
- Students were inspired and enthused
- Developed debate and discussion and How Science Works (HSW) skills

Key reasons it worked

- Giving some power to young people gives them a reason to engage and shows that they are trusted
- The fact that it's real – real scientists, real science, real prize money – makes it far more vivid
- The intimacy of the medium makes it easier to break down barriers and make connections

Who took part?

- 40 classes in 25 schools across the UK, covering different exam boards, types of schools and ability levels.
- 725 students were pre-16 (mostly year 9s), 130 were post-16 (mostly year 12)
- 15 scientists from PhD students to Professors, from academia, research institutes, hospitals, and industry.
- Scientists' research areas included drug development, plant metabolism, bio-engineering, climate change and the psychology of driver behaviour.

Executive Summary

The event

I'm a Scientist is a science dialogue event where school students talk to real scientists online for two weeks. It's in the form of an X Factor style competition between scientists, who compete for a prize of £500 to communicate their work.

For two weeks students read about the scientists' work, ask them questions, and engage in live text chats with them. The students vote for the scientist they want to get the money. The scientists with the fewest votes are evicted until only one is left to be crowned the winner.

The event consists of the event website, and accompanying teacher resources. Taken together these:

1. Gave them a reason to engage (because they had a decision to make, in casting their vote, and real scientists to talk to)
2. Led students through the issues
3. Guided students through how to debate and discuss the issues
4. Gave them lots of practice in debating, discussing and making decisions

Resources include

- Lesson plans which raise and frame the issues (such as thinking about what criteria to judge scientists by)
- Lesson plans and resources which cultivate debating and discussion skills (like the IVF debate)
- Information sheets which tackle contentious issues in science, and introduce complex concepts in How Science Works (HSW), but in a context that makes them accessible
- Quizzes (both online and offline) which help to test understanding

Students

- Developed their debating and discussion skills
- Learnt about How Science Works
- Saw science and scientists as 'real'
- Were empowered and gained confidence
- Were inspired and enthused

Scientists

- Were inspired and energised about their work
- Practised communicating their research
- Practised discussing the ethical implications of their work
- Had fun!

Teachers

- Found it saved them lots of work
- Found it an effective tool for teaching How Science Works
- Had fun and enthused their students

Development of the event

The event has been developed with the kind assistance of a People Awards grant from The Wellcome Trust and was based on our tried and tested local democracy event, I'm a Councillor, Get me out of Here!

Formative evaluation included a consultation panel of teachers, focus groups at the start of the event, and an educational advisor throughout the event. We consulted the panel throughout the process, so that all resources, terminology, etc were checked with working teachers - this was particularly useful.

Outcomes

The event was far busier and more successful than we anticipated. Although slightly fewer students than we hoped took part, they asked far more questions and used the website far more than expected. Feedback from young people, teachers and scientists has been overwhelmingly positive.

31% of students went on the site in their own time, at home.

Every single teacher surveyed would use the event again.

Every single scientist who took part would recommend the event to a colleague.

Students developed their debating and discussion skills
The event was effective because it showed students how to discuss and debate science issues by giving them a structured way in which to do it. It also gave students a reason to engage with the issues, and lots of practice at doing so.

60% of students surveyed said they felt more confident or much more confident at debating science issues.

17 out of 22 teachers surveyed think their students feel more able to debate and discuss science issues.

> "The IVF debate went on for two lessons and they started defending their viewpoints which they wouldn't have done before. They also began to see all sides of the argument rather than have a blinkered approach."
>
> *Rachel Cockburn, teacher, Hetton School*

Teachers realised this opportunity to debate and discuss issues was usually lacking, but that it's essential to really get to grips with ideas and develop critical thinking skills.

> "[Usually] we just fill them full of facts but don't give them a chance to explore that."
>
> *Kirsty Price, teacher, Sherwood Hall School*

Students learnt about How Science Works
Targeted resources and the opportunity to interact with real science and see ideas in action was a very effective tool for teaching How Science Works.

88% of students surveyed said their understanding of what scientists do is better or much better than before.

18 out of 22 teachers surveyed said the event was "Excellent" or "Good" at teaching How Science Works.

"If there's one key thing I would say about the event, it's that it has got them to see that things aren't black and white. And that's the essence of HSW."

Jay Grocott, teacher, Mangotsfield School

Students could see science and scientists as real

Talking to real scientists brought science to life and gave students a reason to engage with abstract HSW ideas. This made their learning much deeper. It also showed them that scientists are normal people and helped students get beyond stereotypes.

"In textbooks it will present a character and say, 'Samira works on a farm…' but you know it's not real so you just don't care. This was different."

Dan Hannard, teacher, Woodkirk High School, Wakefield

"What struck them was that the scientists were all really different, there wasn't a stereotype."

Pam Large, teacher, Sacred Heart High School

"The kids don't usually get a chance to talk to someone who's looked at the data [on climate change]. They were sceptical to start with but most of them were won over when they heard the evidence."

Jenny Barnes, scientist

It built students' confidence

What's key, memorable and effective about the event is the way it gives students a say, and the fact that they are taken seriously by scientists who answered their questions. This was empowering for students and developed their confidence.

15 out of 22 teachers felt their students are more confident in their opinions now.

"[I liked best] how it was totaly up to us and not influenced by adults."

Year 9 student, Ysgol Tre-Gib

"Well [I learnt] from all of it really as i learnt loads and feel much more confident to put my hand up and ask questions and know that ok sometimes i will get it wrong"

Year 9 student, Hetton School

It was fun!

92% of students surveyed said they liked the format of the project.

"i liked everything about this website and i would recomend it to a friend who enjoyed doing science this is a fun way to work!"

Year 9 student, Hetton School

"I think this was probably the best science engagement event that I have ever been involved with."

Liv Hibbit, scientist

"Absolutely fantastic! I was ranting to my colleagues about how great it was and they were all jealous"

Michelle Crooks, teacher, King Arthur's Community School

Scientists
Found that it was excellent training in explaining their work and considering the wider implications. They also found it fun, and a unique depth and breadth of engagement.

> "I am now excited about my work again!! I also FINALLY managed to explain my work to my Dad in a way that he understood!!!"
>
> *Liv Hibbit*

> "It really made me think about what I do and why."
>
> *Maria Tennant*

> "How else could you have almost one on one contact with so many young people, all over the country?"
>
> *Sam Mugford*

The complete evaluation report, including a full audit of the evaluation, by an external evaluation consultant, case studies from participants and information about the development of the project, is available from http://imascientist.org.uk/category/evaluation/.

Teaching materials are available to download free at http://imascientist.org.uk/category/downloadable-teacher-resources/.

To find out more please contact Sophia Collins, Event Producer, Sophia@gallomanor.com, 01225 869413.

Case studies

School: Hetton School, Tyne and Wear

School information

Teacher:	Janet Harland
Type of school:	Community, comprehensive
Year group:	9
Subject:	Double Award Applied Science
Ability:	C/D borderline
Number of students:	27
Time spent on website:	3 hours
Times visited website:	3

Key points

- IAS worked well with a challenging and underachieving group. Taking the group out of the timetable made them feel special and had a positive effect on them
- The IAS resources improved the teacher's confidence in debating science in the classroom
- The Live Chat enabled the students to learn about science content in a medium with which they were familiar
- Scientists were good at answering the students' questions in such a way that the students were able to understand the purpose and benefit of the scientists' work. This ultimately affected the way the students voted.
- Internal timetabling issues meant that students missed out on most of the second week of IAS, including the evictions

The class Janet Harland taught I'm A Scientist (IAS) with were a group that she did not usually teach. They had been a challenging group all year and were under-achieving. The objective behind using IAS with this class was to get them fired up and to raise their motivation and interest in science. IAS was very successful in achieving this objective and the Science Department were surprised by how well it had worked. "The students were seeking us outside the classroom in the corridor and asking if we were doing I'm A Scientist this week or if we'd be in the computer suite."

Janet felt that the IAS resources were excellent and gave her a comfort zone in which she was able to concentrate on the actual debating rather than worry about content. This helped to increase her confidence in debating science issues in the classroom. The lesson plans she adapted were more for her own benefit and how comfortable she felt in teaching them rather than because the plans were not suited to the students' needs. In fact, the resources were so successful that the Science Department are going to embed them into their teaching next year for all of the Science staff to use.

Janet thought that the group learned most about science content from the live chat. In terms of debating skills they learned the most from the first lesson (You're the judges!), and for social skills the IVF debate (lesson 2). The students really engaged with the Live Chat (lesson 4) for two reasons; firstly because the instant-message medium is suited to this age group, and secondly because they were able to communicate directly to scientists in real time. "Instant messaging is part of their world so they ran with it, whereas if I put a scientist in front of them in the classroom it would take longer for them

to interact and ask questions." Although Janet thought that the group struggled with some of the social skills and their questions were less science-based she felt that it was important for them to realise that scientists are 'real people'.

The scientists were praised for being good at bringing their answers to the students' questions back round to their work. "Initially the group were against animal testing, and didn't care about climate change and so on, but in the end half the class voted for Tamsin, the animal testing scientist, because she was able to explain why it's so important to test on animals. It was the same as the climate change scientist who went to Kenya to do some work – they explained it at the kids' level and got them on board."

Unfortunately, due to timetabling issues, the students did not get to vote every day during week two. They voted at the beginning of the week and then the onus was on them to log in and vote during their own time over the rest of the week. Janet put this down to a school issue rather than an IAS issue, but she would like to have had another 'voting' lesson with the class. Regardless of this she still felt that the IAS format worked well. "Our children normally get three teachers a week. For this I took them out of timetable and had them three times. This gave them continuity through IAS and made them feel special, and had a positive effect on them."

Although not her regular class, Janet firmly believed that IAS had improved the group's interest in and understanding of science. "This is the only time this year I've seen this group of students and the difference in their response is that there's more enthusiasm and it's had a positive impact on their aspirations… now we have a couple of budding scientists!"

Janet praised Gallomanor's communication with the teachers, especially as she had picked up IAS cold after her Head of Department (with whom Sophia had initially been communicating) had gone off sick. "Sophia was brilliant. I asked her to email me as much as possible, which she did very quickly, and then shortly after the teacher pack arrived. We were kept up to date and knew when the site went live. Nothing was rushed and we had time to go through everything before we started."

"As a pilot I was very impressed by the set up of IAS and the way it works and I would definitely take part again."

Interviewed by Yvonne Harris

School: Longsands College, St Neots, Cambs

School information

Teacher:	Chris Millington
Type of school:	Foundation Comprehensive
Year group:	Year 12
Ability:	Mixed
Subject:	AS Chemistry/A2 Chemistry
Number of students:	12
Time spent on website:	1 hour
Times visited website:	Once

Key points

- IAS provided AS and A2 Chemistry students with useful skills
- Students applied ideas learned in one IAS lesson to the next
- Students came away feeling that scientists are 'real' people
- The resources opened up new ideas for teaching in the future
- Event timing was the main barrier to greater levels of participation
- In future emails need to be prioritised using a flagging system

The teacher, Chris Millington's objective for participating in I'm A Scientist (IAS) was to give students studying a traditional science course a new experience. "Especially at A Level there's a focus on getting through the curriculum and not discussing science issues, how funding arises, politics, ethics, and so on… whereas on the Applied Science course they tend to get speakers in."

After the event Chris felt that IAS did give the students a very different experience to that which they were used to. He felt that the event had a clear focus: "The students got a different but very useful type of lesson that will equip them with some useful skills that they can use, for example, at interviews."

Chris thought that the ease of access and the quality of the resources worked really well. Although the administration associated with individual student logins was "a bit of a faff" he appreciated that it made IAS personal to them. Chris described the quality of the resources as "excellent" and "pitched at the right level". He also liked being sent things on paper. The debate cards (Lesson 2: IVF debate) were described as "very helpful and a good 'way in' across all abilities". The role play (again the IVF debate) he described as: "Easy for the students to relate to and good to put themselves in the place of someone else." Chris felt that the resources had opened up new ideas that he would use with Key Stage 5 classes next year.

The scientists' profiles enabled the students to bond with scientists. The scientists' different backgrounds and the fact that they were 'real' people increased the students' interest in and understanding of science. Chris thought that it would be good if the scientists' profiles linked through to their websites, as this would enable higher ability students to get more out of the event.

Chris thought that the students enjoyed thinking about the judging criteria (lesson 1: You're the judges). "They threw things up that they'd not thought about much in the past – such a funding nanotechnology – and then you could see they'd taken ideas across from the IVF debate and applied them. They need the ability to think about issues and not be blinkered, and to think about things like the consequences of budget squeezes."

Chris also thought that the IVF debate (lesson 2) had helped to improve the students' debating skills. "They were forced into the roles and had to put themselves into a position and take that role on and think deeply and engage critically."

Communication with Gallomanor was described as "excellent!" Chris said he felt very involved in the process, and that communication was always good. However, in future he would like email senders to adopt a flagging system so that it is easy to tell at a glance what emails are critical or relate to technical issues, so that these can be prioritised for reading.

For Chris the main thing that could be improved on is the timing of the event. During the first week of IAS his students were still on exam leave, and so they started work on IAS once they were back. Shortly after that a lot of the students went away on a field trip, which meant that the homework Chris had set them (to find out more about the scientists and to re-read the scientists' profiles) did not get done. Also, because of the timing, Chris did not book a live chat with any of the scientists (lesson 6). However, for homework he asked his students to think of questions they would hypothetically put to the scientists and also to vote online. Again, because of the timing and the field trip, in many instances this homework was not completed.

Interviewed by Yvonne Harris

Scientist: Scott Grandison

Lecturer in computational biology
University of East Anglia
Previous engagement experience: None

- Built communication skills and confidence
- Encouraged him to do more public engagement in future

"I did I'm a Scientist because I thought it would be an interesting and fun exercise and it would be a good way to learn what sort of questions students had about science and science careers."

"I got a tremendous amount out of it, and I think I probably learnt a lot more from the students than they learnt from me! The questions they asked were challenging and stimulating and in some cases they have made me think about science in a different way. The live chats were exhausting, but I had a lot of fun doing them, and it's going to feel like there's a big hole in my schedule from now on!"

"I think the main thing I got out of it was enjoyment of the experience and feeling that I did a good job talking with students. I haven't done any sort of public engagement activity before… It's certainly encouraged me to do more in the future."

Scientist: Nicola Harris

Trainee clinical scientist in medical physics
King's College Hospital, London
Previous engagement experience: Organised a stand for Kensington school scientific fair.

- Explaining her work to laypeople helped her think it through
- Learnt directly from young people how to communicate better

"I really, really enjoyed it. I loved the live chats, especially the enthusiasm of the kids."

"It was good practice at communicating. It was my first experience really of explaining about what I do to people who don't already know about it and understand what I'm saying. I had to examine my own thought processes and work out what I meant by things in order to work out how to explain them to people. It was a really good experience and helped me think things through."

"The Live chats were very hectic but brilliant. I learnt how to better communicate my ideas to an audience of younger people, through learning from them how best to explain my ideas. I think [the whole event] engaged the kids in a way I've never seen before."

"Expectations exceeded, I thought I would enjoy it but I enjoyed it even more!"