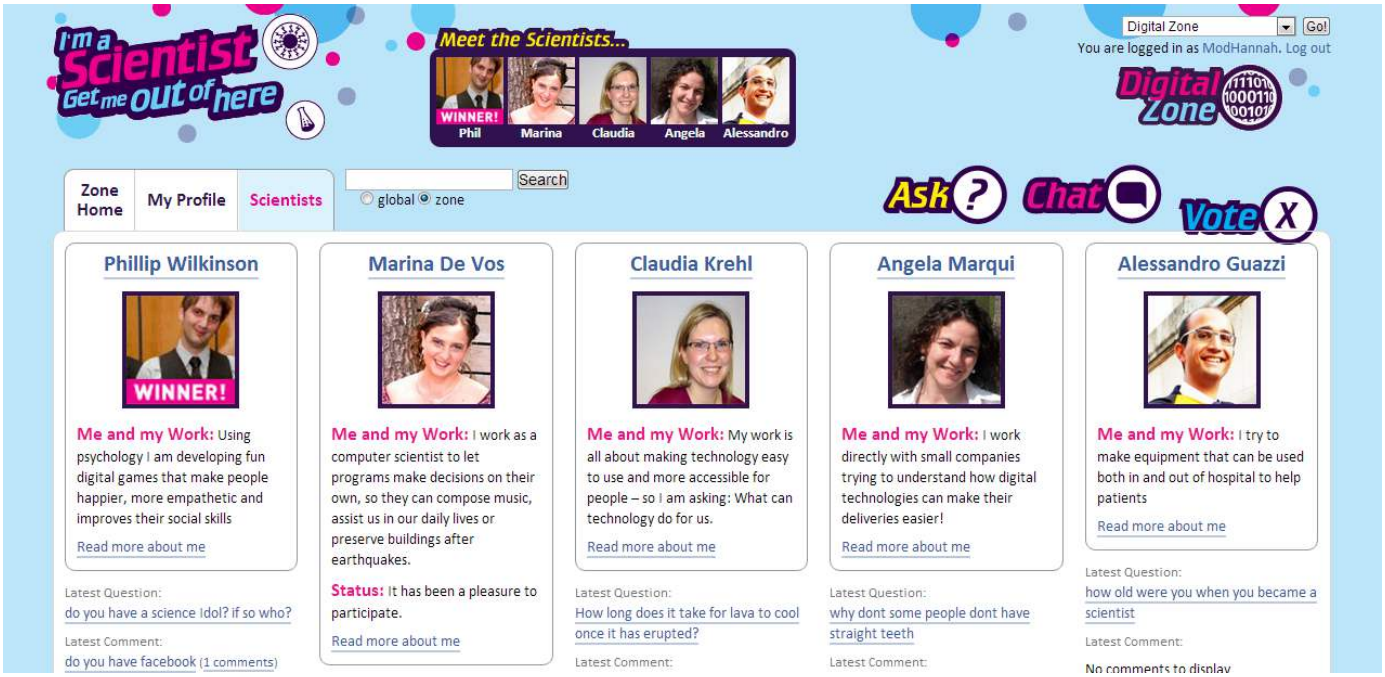
Evaluation report

Digital Zone

March 2013

Funded by the RCUK Digital Economy Theme



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1. Executive summary

The Digital Zone in I'm a Scientist, Get me out of here! 11th-22nd March 2013 was **successful**:

1. The Digital Zone was very busy. It was above average in most measures of activity such as the number of students, number of questions the students asked, number of answers given, number of live chats and the % of students that actively participated. 351 of the 382 students who registered asked a question, talked in a live chat, voted or left a comment. It had the most live chats – 21 of them. See page 4.
2. Many of the zones are biomedical (because of funding from the Wellcome Trust) so it was really great to see students engaging so well with a non biomedical zone.
3. The scientists were challenged within and beyond their areas of research. They all engaged well and were keen to answer questions and take part in the live chats. The scientists developed the way they communicated with the students during the event, saying *"I didn't get them engaged in the first few sessions; I had to rethink the way I answered questions. It took practice, but that's what it's all about, learning how to communicate".* See page 8.
4. Researchers found the training session useful and beneficial and found the experience of taking part in the event very positive. See page 8.
5. The drop out rate for teachers was low in the Digital Zone – 11 of the 13 teachers given places turned up with their students.
6. Students felt empowered to ask questions and engage with scientists.

The Digital Zone was **less successful** in that:

1. Around 10% of questions asked in the Digital Zone were on the Digital Economy topic, whereas previous themed zones have increased the % of questions on topic to around 22%. It seems students didn't really understand what was meant by the Digital theme. The scientists picked up on this, but were able to get round it by relating answers and live chats to their research. If it were to run again we would try and involve more teachers from other subject areas to incorporate the broadness of the Digital Economy theme.

2. Introduction and background

I'm a Scientist, Get me out of here! (IAS)

I'm a Scientist, Get me out of here! is an online event where students get to meet and interact with real scientists. It's an X Factor-style competition between the scientists, where students are the judges. Students submit questions which the scientists will try to answer by the next day. Students then have live online Facebook-style chats with the scientists, where they ask questions, learn more about the scientists, and let scientists know their opinions. It takes place online over a two week period.

The event ran for the 11th time from 11th-22nd March 2013. In each zone there are 5 scientists and around 350 school students in 20 classes. IAS is designed to support the How Science Works curriculum and to bring real science to life for students, supported by carefully developed classroom resources. It helps:

- Develop discussion and critical thinking skills
- Cover key concepts in How Science Works
- Get students engaged with science
- Provide lesson plans, information sheets and resources for different ages and ability levels, between years 9 – 13

The RCUK Digital Economy Theme

Research Councils UK is the strategic partnership of the seven Research Councils in the UK. RCUK works to further and promote new ideas in science and innovation, through investing public money into UK research. RCUK allows the Research Councils to work together more effectively to enhance their overall impact and deliver Governmental objectives for science and innovation.

RCUK works with seven cross-cutting research themes, to promote multidisciplinary research across the Research Councils. The Digital Economy Theme is one of these, and is led by EPSRC. The Digital Economy Theme aims to support research to "rapidly realise the transformational impact of digital technologies on aspects of community life, cultural experiences, future society and the economy." Researchers in the theme come from a wide range of disciplines, including social science, engineering, computer science, the arts and medical research.

3. Activity in the zone

The Digital Zone ran alongside 10 other zones in I'm a Scientist in March 2013. The Digital Zone was above average in most measures of activity such as the number of students, number of questions the students asked, number of answers given, number of live chats and the % of students that actively participated. 351 of the 382 students who registered asked a question, talked in a live chat, voted or left a comment.

	Digital Zone	Average of all 11 zones	Total in all 11 zones
Number of registered students	382	339	3,731
% of active students (ASK, CHAT, VOTE or commented)	92%	89%	-
Number of questions asked	1,173	846	9,307
Number of questions approved	501	356	3,921
% of questions approved	43%	44%	-
Number of students that asked questions	135	160	1,756
Number of questions asked per student	3.1	2.4	-
Number of questions marked as duplicates	84	140	1,536
Number of questions answered	436	325	3,578
Number of answers given	687	669	7,357
Total number of comments	88	105	1,154
Number of votes	350	296	3,255
Number of live chats	21	16	179
Number of lines of live chat	6,095	5,088	55,971
Number of students who chatted	294	256	2,812
Number of schools	11	9	97

Key figures for the Digital Zone and averages and totals across all 11 zones

The Digital Zone was busy throughout the fortnight, with lots of questions asked outside of the live chats, usually arriving in bulk rather than gradually.

Popular themes in the live chats were games and robots, with the same questions coming up again and again, including: *what's your favourite game? will robots take over the world? how can people benefit from video games?* and *how do you program robots?* An interesting question Claudia was asked a few times was *when are we going to have phone apps in our head?* Some of the younger students asked for jokes towards the end of their chats, and the scientists happily obliged!

The zone started off receiving digital questions, and then questions became broader in the second week, possibly due to the younger students. Questions about aliens and space became prevalent, particularly ones about meteors and black holes.

Phil often seemed to take the more leftfield questions, such as *is this true, if all chickens on the planet were fried and chopped up, would it fill enough bargain buckets to go to the moon and back three times?* and *bro, do you even lift?*, engaging well with the students. There were some interesting questions about language, 'pruney' fingers and how science began, which received some interesting responses. Students also left comments in response to some answers.

Zone page	Page views
Total zone	19,067
ASK page	2,171
CHAT page	2,438
VOTE page	1,295
Phillip Wilkinson	832
Marina De Vos	421
Claudia Krehl	400
Angela Marqui	286
Alessandro Guazzi	472

Page views of various pages in the Digital Zone

The location of all of the schools and scientists in the UK that took part in the March event. School s are in purple, scientists in pink. The location of schools just in the Digital Zone is on page 7.

4. Participation

4.1. Scientists

The 5 scientists in the Digital Zone were selected based on being funded by the RCUK Digital Economy Theme. They were based at a range of institutions in the UK.

There were a total of 350 votes cast in the Digital Zone. There were four rounds of voting with one scientist evicted at each round. Students could cast their vote in each round. **Phil Wilkinson** was the winner of the Digital Zone.

Scientist	Institute	Brief description of their research. Written by the scientist for rating by students, teachers, IAS staff and RCUK	Result	% of votes	Number of profile views
Phil Wilkinson	Bournemouth and Bath Universities	I am exploring the way video games and digital media effects our mind and emotions with aim to create fun games that make us happier, confident and improve our social skills.	1st	55%	832
Claudia Krehl	University of Nottingham	I work in Human Computer Interaction, that means I get to play with the latest gadgets with the aim to make it easier for people to interact with their phones especially when they are multitasking on the move.	2nd	22%	400
Alessandro Guazzi	University of Oxford	I use cameras to find out how healthy people are, so that they won't have to go to hospital anymore.	3rd	12%	472
Marina De Vos	University of Bath	I work as a computer scientist to let programs make decisions on their own, so they can compose music, assist us in our daily lives or preserve buildings after earthquakes.	4th	9%	421
Angela Marqui	University of Aberdeen	I'm working with companies that sell their stuff online to learn how to keep the person waiting for their stuff better informed about where is my stuff and when should I stay at home waiting for a delivery using mobile apps and text messages	5th	3%	286

The five scientists in the Digital Zone

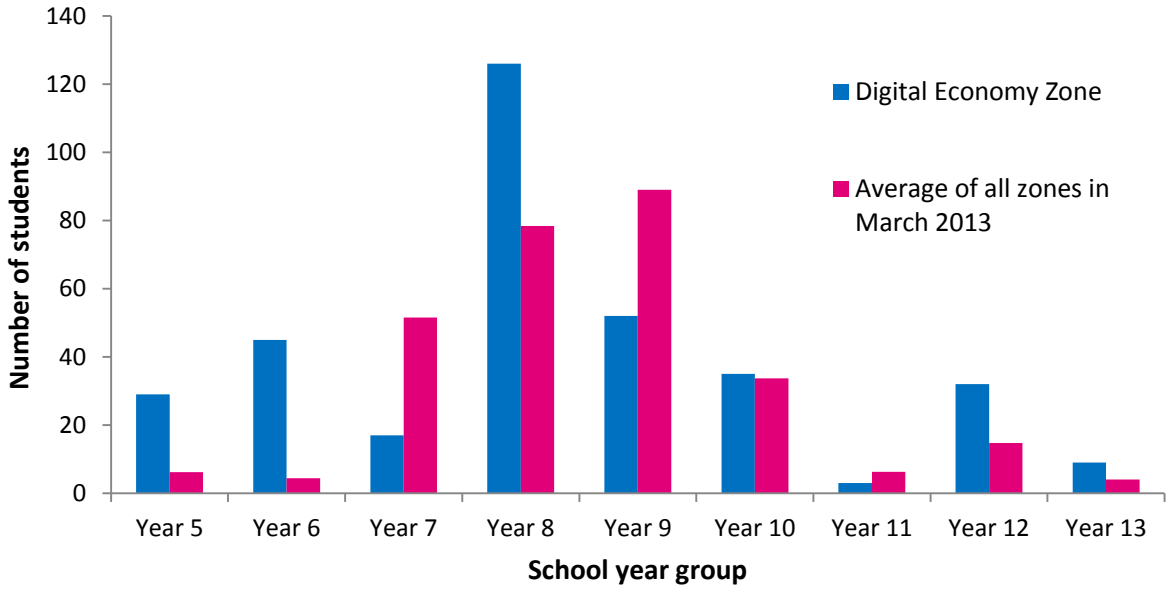
4.2. Schools

11 of the 13 schools given places in the Digital Zone turned up. This drop out rate is lower than expected. As shown on the map below there's a good spread of school locations round the country.

The location of the 11 schools in the UK that took part in the Digital Zone

Student breakdown by age

The distribution of students by year group in the Digital Zone doesn't follow the average of all zones. Of the 382 students in the Digital Zone, around a third were Year 8 students aged 12/13. There were more Year 5 & 6 students than expected. We let Primary Schools take part but split then evenly between all the zones. The default option when students tell us what year they're in at school is Year 5, which may explain the higher than expected number of Year 5s in this zone.



The breakdown of students by school year group

4.3. Scientist training

As an added benefit to the RCUK Digital Economy Theme Gallomanor ran online communication training for the Digital Zone scientists. The training was optional and offered to all scientists in the weeks before the event started. It was aimed at introducing them to communicating online, and to still be beneficial even if the scientists had done public engagement activities before. The aims of the training were:

- To prepare the scientists to take part effectively in I'm a Scientist and in future public engagement activities
- To prepare the scientists to get the maximum development benefit from taking part
- To give the scientists a chance to 'meet' each other, learn from each other, and develop camaraderie

Three of the scientists attended the whole session, one arrived late due to another commitment, and one contacted us to let us know they couldn't make it. All those who attended said that they **found the training useful**. The scientists present **discussed their reasons for taking part**, their **previous public engagement experience** and what they hoped to **gain from the experience**, and they asked a number of questions about **how everything would work**.

4.4. Scientist feedback from telephone interviews

We conducted 3 telephone interviews with scientists from the Digital Zone in the week commencing 15th April 2013, with Claudia Krehl, Phil Wilkinson & Marina De Vos. The feedback was very positive:

"It was rewarding. It's nice to do something to get people thinking about university and science"

"It was very much enjoyable – a little more challenging than I thought it would be waking up every morning bombarded with questions!"

"It was really good fun, I got really into it, I'm quite a competitive person. I really enjoyed the challenge of talking to people from an age range I've never talked to about my work before".

All three scientists said they **enjoyed the live chats most**: "*You really get going and feel the adrenaline" "It was exciting, had me on my toes, I had to think quickly which I really enjoyed*".

Question content

However they did note that **questions asked weren't always very closely related to their own work**: *"I was surprised there was very little about computer science – it was slightly disappointing" "I think they did appreciate what I did, though they were interested in games rather than my specific area of research"*. Although Claudia said: *"The kids are interested; that's more important than them asking the questions we want them to ask".*

Benefits to students

All recognised the **benefits to students**: *"I didn't expect the volume of questions, or the intensity. It could be superficial if they ask generic questions, but follow up questions add depth" "Most students are interested, it's just about the way we talk to them. Sometimes I was really surprised by the questions, they made me smile and think about things" "It's all about them being curious and them*

finding out stuff; answering their questions and taking them seriously. They realised science was something interesting, even if they don't get a job in it".

Previous engagement experience

Marina first heard about the event through a former PhD student talking about it. She said that taking part was a nice **extension of other engagement work** she's been doing: *"Schools are a lot more passive – students find it hard to speak up and do things – this was a lot more active; makes it more fun to participate in"*. She felt that as the students lead the discussion, they're more likely to take something away from the event.

Phil had **done some public engagement work in schools before**, but felt that this was quite different: *"There are advantages in terms of more freedom – the kids can ask any questions they feel like, which is a good thing and a bad thing".* He added that *"it's an avenue to talk to a lot of kids in a short period of time"* and said *"I love that the answers are going to stay there"*. Claudia wanted the **chance to talk to people outside of academia** about her research: *"It was a completely different audience; it challenges you to rethink what you do, and why it's challenging and interesting".*

Improved communication skills

All three of the scientists felt they benefitted from the experience, and in particular that it helped them with their **communication skills**: "*The research I do isn't very practical, which makes it hard to explain, having to explain it to people who don't know meant that over the two weeks I polished my story"*

Changing their approach during the event

Some of the most illuminating comments came when the scientists discussed how **they changed their approach to communicating with the students** as live chats and answering questions progressed: *"I couldn't articulate my work at first, but then I got it into simple language. I'm a lot more confident and motivated now – the kids were actually really quite interested in some of my ideas" "I didn't get them engaged in the first few sessions; I had to rethink the way I answered questions. It took practice, but that's what it's all about, learning how to communicate".*

Future engagement

All said they would do **more public engagement work in future**, Marina said she would try different types of outreach, and Claudia said she would prefer to be invited to do something, though would *"definitely be up for doing something like this again"*. When asked whether they would recommend the event to colleagues, all said they would, and Phil said he already had.

Suggestions of how to improve the event

Phil suggested improving the event by linking it to Facebook; he also mentioned that popular questions could be pushed to the top of the page, enabling a 'top 5' each day or similar. Marina would have liked ASK questions that had been answered by another scientist to no longer appear as unanswered in her own list, so she could focus on questions with no answers. Claudia noted that she found it difficult to find the chats booked in, and she disliked the chats being stopped suddenly, asking whether a counter could be added so everyone knows how much time is left.

4.5. Question coding

Questions posed through the ASK facility are moderated by the team before being approved to the scientists. Due to the large volume of questions asked there are options to mark questions as a duplicate of another, refer the student to see the scientists profile if the question has been answered there, and delete rude or offensive questions (see moderation policy: imascientist.org.uk/scientists/help-2#moderation).

To see what themes came out in the questions we analysed the 501 questions that were approved to the scientists in more detail. Each question was sorted by two measures: the type of question (whether the student was asking for a Fact or an Opinion) and the subject the question was on (including Personal, about the Event, Workday, Space, specific to the Digital zone theme etc).

Fact or opinion

95% of all the questions asked to the scientists were asking for Facts (What? Where? Why? and How?) and 5% asked for the scientists' opinions (What do you think?). While the majority of questions were aimed at finding out an answer to a question, a small number of students did also want to engage with the scientists on a more personal level. This more personal connection extended much more into the live chats where the students were keen to hear the scientists' opinions.

Type of question	Count	%
Fact	474	95%
Opinion	27	5%

Question topics

Tagging the questions was fairly subjective, as some questions could fit into multiple topics. The topics can quite generally be split into those asking directly about science, and more personal ones such as about being a scientist or careers. The top categories are shown on the right.

Around 20% of questions asked in the Digital Zone were Personal – *What do you like most about science??? If you had unlimited funds, what would you try to do to make the world better?* The students were keen to see the scientists as real people, not just through their work.

7% were about Careers – *What kind of education did you need to start? What are the traits of a perfect Scientist?* And 5% were about the Workday of a scientist – *Do you ever feel under pressure to make sure your experiments go right? How long are the hours you work?*

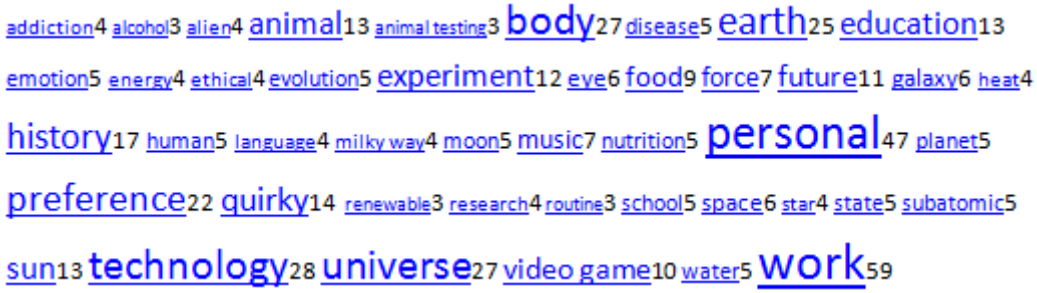
Subject	Count	%
Personal	94	19%
Space	55	11%
Science	50	10%
Digital	39	8%
Physiology	39	8%
Other	37	7%
Career	33	7%
Workday	25	5%
Earth	15	3%
Technology	12	2%
Energy	10	2%

Aside from 2 questions about the I'm a Scientist event and 37 tagged as other (such as *How old is the Great Wall of China?*) the remaining questions were all asking about different areas of science from Animal Behaviour to Particle Physics. Questions about Space are always popular (11%) and 10% were

more general science questions that didn't fit the categories (such as *Has all the air in the world been breathed before?)*.

Around 10% of questions asked in the Digital Zone were on the Digital Economy topic, whereas previous themed zones have increased the % of questions on topic to around 22%. It seems students didn't really understand what was meant by the Digital theme. The scientists picked up on this, but were able to get round it by relating answers and live chats to their research. If it were to run again we would try and involve more teachers from other subject areas to incorporate the broadness of the Digital Economy theme.

Examples of Digital questions asked
Have you found a link between computer games and violent behavior, or is it more likely to gain positive skills from them?
How will mankind evolve given changes in technology and climate?
have you made any equipment that is currently being used in a hospital?If so what are they?
Do you enjoy involving other people with your work to make it more interactive?
Considering you are creating fun digital games how will this change our lives and make us more sociable?
How has new technology helped your research in games?
Hi can you make a phoneipod that is controlled by your brain
As I recall, moores law essentially states that processing power doubles every 18 months. Could, theoretically, a computer advance so far as to be capable of running a complete simulated replication of a persons personality? Or further, like a simulation of actual reality? (like 'The Matrix' or something :D)
if technology helps with delivery can it help us by thinking for itself??



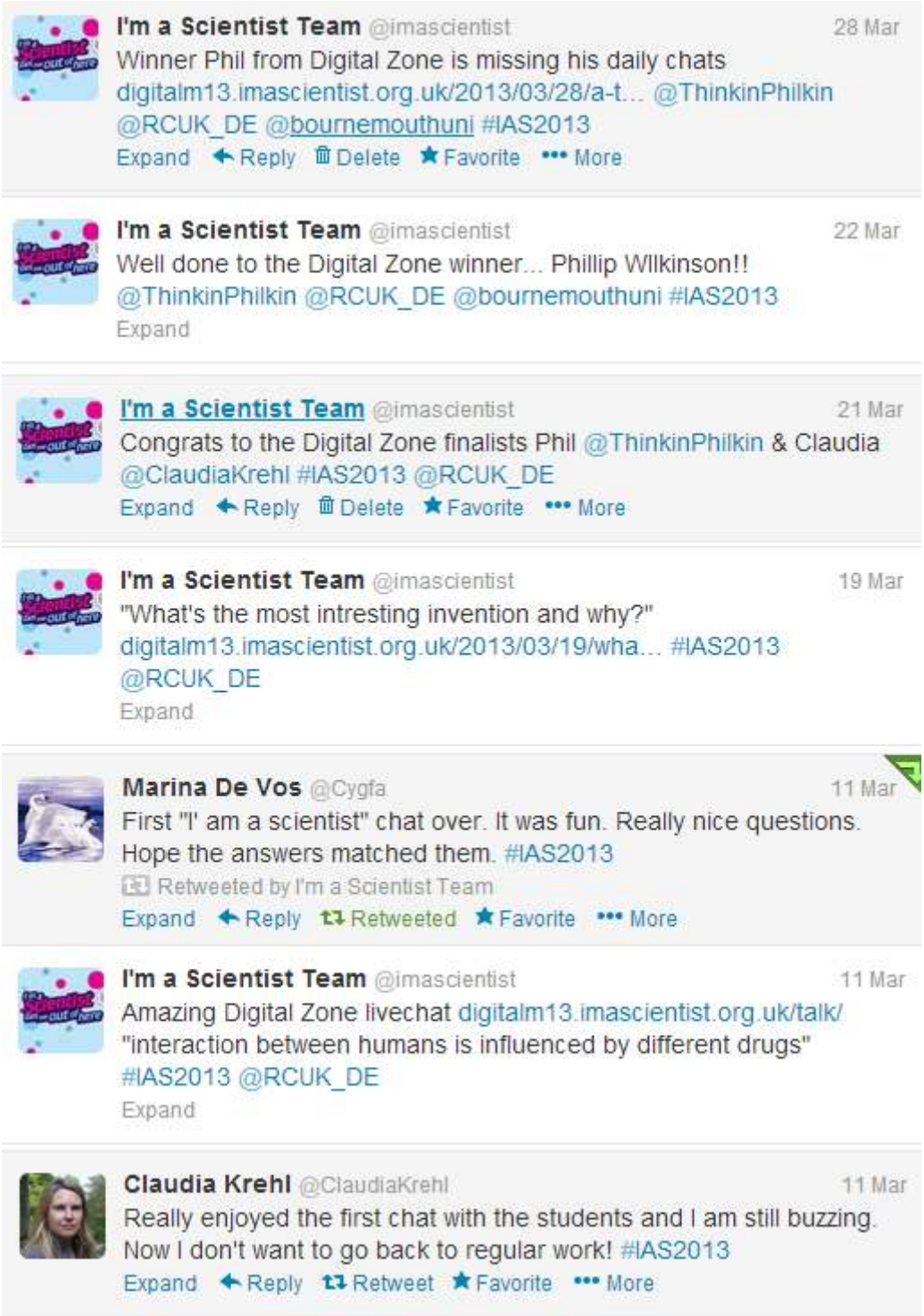
Key words in the Digital Zone. Moderators tag the keywords in each question so when people are browsing the website, the site can suggest 'related questions' on a similar topic that they might also want to read. The size of the word represents its popularity; the superscript number indicates the number of times it was tagged as a key word.

The most popular used words from the Digital Zone live chats that took place over the event. The size of the word represents its usage and popularity.

5. Publicity

Twitter

I'm a Scientist (@imascientist) regularly tweeted event updates and popular questions asked across all zones. Tweets mentioned the RCUK Digital Economy Theme's sponsorship of the zone, and linked to RCUK Digital Economy twitter account (@RCUK_DE). Four of the Digital scientists were on twitter, and two of them tweeted about the event.



6. Benefits and quotes

Scientists

Scientists improved their communication skills and often found a renewed vigour for science and their research. At the time of writing 33 of the 55 scientists had completed the post-event feedback survey. 94% they would recommend doing I'm a Scientist to a colleague. Here are some of their comments:

> *"I cannot fully articulate how much I enjoyed this experience! The questions were thoughtful and insightful, such that it made me start to question my own knowledge and assumptions. The excitable, and sometimes irreverent, nature of all the kids involved was incredibly motivating, especially when they asked about my research."* – Digital Zone Scientist
>
> *"It was way more fun than I thought it would be, especially once I'd done the first few chats and settled in!"* – Scientist
>
> *"I genuinely really enjoyed IAS: it was a brilliant feeling that we were potentially inspiring some very enthusiastic kids who might one day take up scientific careers of their own."* – Scientist
>
> "*The whole experience was thoroughly enjoyable and a bit different - in a good way! So thanks for letting me take part.*" – Scientist
>
> *"I though the event was great! really valuable experience and the students were at times hilarious and at others asking completely mind-blowing questions."* – Scientist
>
> *"I loved the way this facilitated interacting with lots of energetic students at a low time and $ cost to me."* – Scientist

Students

Students gained an increased awareness of what scientists actually do and what scientists are like.

Students engaged in debates with scientists, after scientists answered questions. Students felt empowered enough to tell scientists their views and discuss topics with them. It also showed students that scientists don't always know the answer. Scientists were challenged by the questions asked.

Many students left positive comments during or after live chats, including:

> *"well its been an absolute pleasure talking to these talented scientist but im afraid ive got to go and learn some stuff at school now*" – Digital Zone Student
>
> *"@ marina, phil and claudia thank you so much for your time I have really enjoyed myself. good bye"* – Digital Zone Student

Teachers noted how their students had benefited from taking part:

> *"Our school has thoroughly enjoyed the event and the three classes have all loved taking part. We want to thank you for doing what you're doing as it's really opened the eyes of our*

students to what being a scientist is really like. From staff feedback I am sure we would be very keen to take part in future events." – Digital Zone Teacher

"Excellent thank you very much! We all really enjoyed the event!" – Digital Zone Teacher

"This is our fourth session of "I'm a scientist..." and it has been a great success again. My students were truly disappointed when their allotted half hour of live chat came to an end!" – Teacher

"Our students really enjoyed it and it ran well. Thank you!" – Teacher

"The live chats were brilliant and I couldn't believe how interested and engaged the pupils were." – Teacher