



*I'm a Scientist, Get me out of here
November 2013 – evaluation report*

The screenshot shows the 'I'm a Scientist' website interface. At the top, there is a navigation bar with the 'I'm a Scientist' logo, a 'Meet the Scientists...' section featuring five scientist portraits (Sinead, Jessamyn, Eleanor, Chris, Adam), and the 'Nanotechnology Zone' logo. Below the navigation bar, there are buttons for 'Ask?', 'Chat', and 'Vote'. The main content area displays five scientist profiles in a grid:

- Sinead Cullen:** Labeled as 'WINNER!'. Her bio states: "Me and my Work: My work involves making new biological tests to try diagnose one of the worlds biggest killers, heart disease." Status: "I can not believe I made it to the final, I am still in shock, this is amazing :)".
- Jessamyn Fairfield:** Bio: "Me and my Work: I'm a nanoscientist, so I take nanomaterials and apply light and electric fields to see what happens." Latest Question: "did anything ever go wrong while trying to solve a new puzzle".
- Eleanor Holmes:** Bio: "Me and my Work: I make and test electronic devices built from graphene to probe the properties of this century's 'Wonder Material'". Latest Question: "what do you think of the new Massey Ferguson 135 model ???".
- Christian Wirtz:** Bio: "Me and my Work: I build nanostructures from atoms and molecules... kind of like using LEGO, but even the finished products are smaller than a virus." Latest Question: "How do tummy bugs and colds start? like how does the first person get it?".
- Adam Murphy:** Bio: "Me and my Work: I'm a Ph.D. student in DCU using lasers to make very tiny shapes with silver that can be used to detect disease." Status: "I'm in the final two!? I'm so happily surprised!". Latest Question: "how do you make lasers".

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1.0 Summary and reflections

This was the second time we've run *I'm a Scientist* in Ireland and once again, it was a real pleasure.

1. The enthusiasm for the event shown by teachers, students and scientists was magnificent

The Irish science community was again very enthusiastic about *I'm a Scientist*. All the class spaces were filled and we had to turn more than 10 schools away as we didn't have any places left. We run 4 zones, instead of the 3 zones that we run last year, and we also got a higher number of registered students in each zone.

The scientists were engaging, amusing and extremely friendly. One scientist, Nanotechnology Zone winner Sinead Cullen, blogged about her feelings and thoughts before the event:

<http://sincully53.wordpress.com/2013/11/10/im-a-scientist-is-starting-tomorrow-and-im-a-bit-nervous/>

We followed up scientists, students and teachers after the event, and we got great feedback about it. One of the teachers made some very positive comments highlighting the advantages of *I'm a Scientist*:

"This event offers the opportunity to do something different; an activity that brings out new strengths and abilities". Sandra Byrne. Teacher

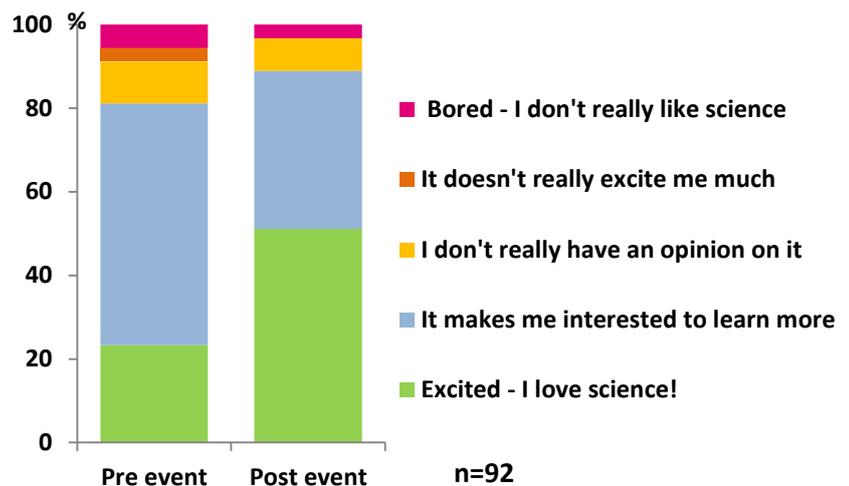
2. The students really got into the spirit of the event.

The students were very interested in the scientists themselves, with lots of questions about their former education and actual leisure pursuits. The themed zones encouraged discussions around their particular topic, the students really focused on each scientist's research area and asked questions about that.

Moreover, we asked the students to fill in pre and post event surveys in order to measure any potential changes in their attitudes towards science. We were very

happy to find out that students' interest in science and science related careers is clearly increased after taking part in *I'm a Scientist*. (See more in section 5.4)

How does school make you feel about science?



2.0 Introduction

I'm a Scientist is a science engagement event that's been running since 2008 in the UK. Last year was our first time running *I'm a Scientist* in Ireland and, giving the encouraging results that we got, we decided to run it again this year.

Gallomanor was awarded funding to run *I'm a Scientist* in Ireland as part of Science Week, in November 2013. 4 zones were run – two themed on Nanotechnology and Space and two general zones named Helium and Lithium with a mix of 5 scientists. There was additional sponsorship from Science Foundation Ireland's Discovery Programme. Additionally, the Space Zone was funded by ESERO Ireland and IOP Ireland funded the Nanotechnology Zone.



I'm a Scientist is an X Factor-style competition for scientists, where students are the judges. Scientists and students talk online at imascientist.ie. Scientists and students break down barriers, have fun and learn. But only the students get to vote. The event runs for two weeks at a time.

There are three main parts to the event – ASK, CHAT and VOTE.



Students ASK questions which the scientists then answer in their own time.



Scientists CHAT online with students, answering their questions and hearing their opinions.



Students VOTE for the scientist in their zone they think should win a prize of €500 to communicate their research.

2.1 Outcomes

As we stated on our application, the main original outcomes of this project are:

Outcomes

1. To produce a high quality online event including teacher packs;
2. To run 4 zones. Each zone consists of 5 scientist and 20 classes. 4 zones equates to 20 scientists, 80 classes and 1,400 students;
3. To evaluate the project throughout, to measure if our aims and objectives are being met;
4. To disseminate the findings of the project, promote and seek funding for running beyond 2013.

Evaluation questions

1. Do the scientists view their participation as a positive experience? ✓
2. Have they / do they think they have improved their communication skills? Particularly, but not solely, in terms of online and young people. ✓
3. Has the event changed students' perceptions of science? ✓

Intended project outcomes

Given that *I'm a Scientist* is a project that involves students, teachers and scientists, the objectives can be subdivided in three groups:

Outcomes for scientists:

- Awareness: learn that young people are interested in their work and that they want to engage with scientists
- Attitudes: Public Engagement is enjoyable, worthwhile and useful to them as scientists. To feel that online engagement is as useful and enjoyable as offline methods.

Outcomes for students:

- The students find the event enjoyable, interesting, informative, interactive and well organised.
- Awareness: change students' perceptions of science. They learn about the wide range of opportunities in science, and that careers in science are suitable for them. Learn about the social impact of science.
- Attitudes: realise that scientists are human.

Outcomes for teachers:

- The teachers find the event enjoyable, interesting, informative, interactive and well organised.
- The teachers benefit from taking part in terms of their teaching methods, and understanding their students' views of science.
- Teachers think their students have benefited from taking part.

2.2 Methodology

This evaluation used a combination of quantitative and qualitative data and methods, including:

Pre and post event online surveys for scientists, teachers and students. All scientists and teachers are asked to complete the relevant pre-event survey, and everyone (students included) is asked to complete an important post-event survey straight after the event. Student completion is incentivised with one student (chosen at random) winning a €25 iTunes voucher. Slightly different versions of the surveys were produced for each group. 10 scientists responded to the post-event survey, 2 teachers and 143 students (out of the 20 scientists, 27 teachers and 1,247 students who took part).

Sampled telephone interviews with two scientists and one teacher.

Analysis of basic web statistics on site usage allows us to benchmark against the previous Irish event, and to compare zones.

School analysis, location in Ireland and a comparison between schools and teachers who register but don't take part, and those who actively participate.

Scientist analysis to check that we have a broad range of scientists in terms of age, discipline, career stage and place of employment.



3.0 Key figures

3.1 Key figures from the event

Being online gives us the opportunity to gather a massive amount of data about the event. The table below summarizes some of the data collected for *I'm a Scientist* in Ireland in November 2013, compared to event that was run last year. Importantly, it should be noted that this year's event had 4 zones, whereas last year the event was composed of 3 zones only.

Key figures from *I'm a Scientist* in November 2013 and November 2012.

	2013 zones average	2013 event total	2012 zones average	2012 event total
Number of scientists	5	20	5	15
Number of registered students	312	1,247	270	859
Number of schools	11	23	10	29
% of active students (ASK, CHAT, VOTE or comment)	78%	-	79%	-
Number of questions asked	471	1,883	499	1,498
Number of questions approved	239	956	230	690
% of questions approved	51%	-	46%	-
Number of answers given	492	1,969	487	1,461
Total number of comments	84	337	75	225
Number of votes	198	792	228	683
Number of live chats	11	42	13	38
Number of lines of live chats	3,823	15,293	3,166	9,499

This year's event seems to have been more active in the live chats than in the ASK section compared to the event that was run in 2012. The next most outstanding difference is the number of registered students registered in each zone. Last year, an average of 270 got registered in each zone, whereas this year the number of average students registered in each zone went up to 312.

During the two weeks of the event, plus the two weeks surrounding it (previous and posterior), there were over 86,000 page views from more than 8,400 visitors – that's over 6,500 visitors looking at the site on top of the scientists, students and teachers taking part. We should note that the event registered 33,000 more page views and doubled the number of visitors when compared to last year's event. Altogether, these data suggest that the event is being appreciated by the Irish educational and scientific community.



This year we tried to be very selective on the teachers we chose to take part in the event. Last year 41 teachers registered, but 7 of them dropped out. As a result, we decided not to select these teachers for this year's event in order to favour the participation of new more committed teachers. After our selection process, 39 teachers from 33 different schools were given a place to participate in *I'm a Scientist* 2013, however and to our disappointment, the dropout rate was higher this year than it was in 2012 and 10 of this 33 schools didn't show up. So far, the only we have failed to find any trend or characteristic that these schools share; they are a mix of primary and secondary schools, spread across all Ireland. It can only be pointed out that 4 of the schools that dropped out were assigned to the Helium Zone and another 4 schools were assigned to the Nanotechnology Zone, being these two zones the ones with the highest number of "no shows". We are quite disappointed that these schools did not show up, especially because we got oversubscribed and had to turn away more than 10 schools, which could have benefited from taking part of the event.

20 scientists and 1,247 students took part of the event. Taking into account that our original aim was reaching 1,400 students, we have not met this particular objective. This is specifically due to a low number of students participating in the Helium Zone. 350 students were programmed to take part of the event in Helium, but ultimately some classes did not turn up. This left the zone with a low attendance of only 207 students, almost 150 less than expected. We will contact the schools that booked a place for the event, but decided to not take part of it in order to find out what kept them from joining *I'm a Scientist*.



3.2 Levels of engagement

The degree of engagement of scientists and students can be measured by analysing the data collected from the site and post-event surveys. Figures from *I'm a Scientist Ireland 2013* are in the green boxes (to the left), and figures from *I'm a Scientist Ireland 2012* are in the blue boxes (to the right) for comparison.

10 of the 20 Irish scientists and 11% of students (143 out of 1,247) filled out the student survey, but only 3 out of 27 teachers filled out the post-event survey. This might seem like a small sample; however it represents 11% of the teacher that participated in the event, which is the usual survey response rate. A link to the feedback survey was emailed to teachers and scientists, but the students' post-event survey was embedded in their online profile. However completion of the survey was (near unavoidably) self-selecting, which could tilt the data towards the keener students who aren't representative of the whole student body. In fact, 57% of the students filling the survey said they loved science and only about a 3% of them said they didn't like it. For a detailed analysis of students' surveys, please see section 5.4.

78% of students that registered on the site actively took part by participating in a live chat, asking a question, leaving a comment or voting for their favourite scientist.

79% of students actively participated

100% of scientists who completed the feedback survey would take part again.

90% of scientists who filled in the feedback survey would take part

100% of scientists who filled in the feedback survey would recommend the event to their

91% of scientists who filled in the feedback survey would recommend the event to their colleagues

An average of 312 students got registered in each zone.

270 students were registered in each zone on average.

15,293 lines of live chat were written by scientists and student

9,499 lines of live chat were written by scientists and students in the 31 live chats, averaging 306 lines per live chat and over 3,000 per zone.

Very importantly, 78% of the students that were registered in the event were active users who left comments, asked questions and chatted with the scientists. To get a more accurate view of the level of engagement of these active users, we have estimated the amount of time that the average active student spent on the website during the two weeks of the event plus the week before and the week after it took place. We have found out that students spent an average of 35 minutes on the *I'm a Scientist* website. This is the average time that students were genuinely engaging with real science and real scientists.

If we look at the average time that scientists spent online, we also get a very positive figure; an average time of 20 hours spent answering to questions, chatting, commenting ... or in short, engaging with students or other scientists.

The four zones had different question and live chat focuses.

Helium Zone

As a general themed zone, the Helium Zone attracted a great array of questions and topics; ranging from biology questions such as “*why do we have two eyes?*” to questions about day to day science like “*who invented the hoover?*” Different ethical and philosophical concerns came up in CHAT as well as in the ASK section on animal behaviour and artificial intelligence.

Finally, [Shane](#) and [Karen](#) tended to write lengthy and thoughtful responses to questions in the ASK section and in the live chats.

Lithium Zone

Given the great variety of scientists in this zone, the range of topics covered was broad; from animals and disease, to advice and opinions about careers in science and science education.

There was a lot of interest in [Sive’s](#) research on *tenrecs* - weird mammals from Madagascar which look like hedgehogs but are actually more closely related to elephants - and in [Emma’s](#) work looking at addictive drugs. A lot of maths questions came through for [Cathal](#) in the ASK section.

Other popular topics included family and personal hobbies, animals, space, technology, and everyday science.

Nanotechnology Zone

In both the CHAT and the ASK section, there were a lot of questions about Nanotechnology’s everyday uses and how it affects us and the development of new technologies. Students were clearly interested in [Adam’s](#) work using lasers to make chips to detect disease. There were also a significant number of questions on religion and faith, which was a common occurrence in the zones ran in Ireland. Personal questions on music groups and fashion also came up.

Space Zone

Naturally, the question the scientists were asked the most in the live chats was ‘*Do you believe in aliens?*’. Other popular topics, both in the live chats and in the questions, were the end of the world, stars, comets, and black holes. The students were curious to know whether the scientists had been into space. There were also a lot of questions on Wi-Fi and cameras in space. Finally, religion and faith were also discussed in this zone.

[Eoin](#) never held back when answering questions, and often expressed each answer with directness. He was also asked a few times about CERN, from the students who had read his profile.



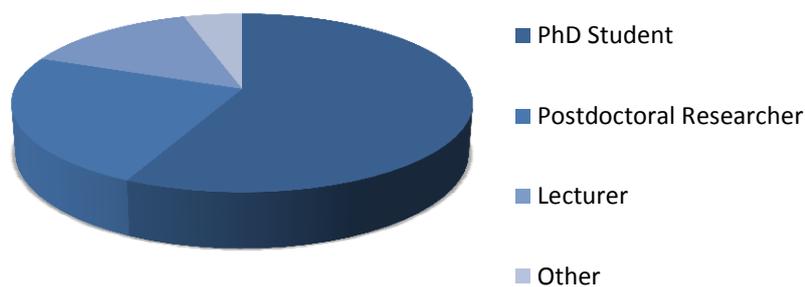
4.0 Scientist evaluation

4.1 Breakdown of scientists taking part

Academic career stage

57% of the scientists were PhD students, 24% Postdoctoral researchers and 14% were Lecturers. There was also a Research Projects Coordinator and a one scientist that did not give us any information and didn't take part of the event in the end, even after following up on previous emails and having confirmed her commitment to continue to do so.

The academic career stage that the scientists are in



Gender

We got a perfect gender balance: of the 20 scientists that took part, 50% were male and 50% were female. Moreover, 2 of the winners were male and 2 were female.

Work place

All the scientists worked in Universities or in Research or Diagnostic Centres related to Universities. The represented universities are listed on the right. Two of the scientists were abroad, one was in Northern Ireland and 16 were in the Republic of Ireland. This adds up to 19 scientists, since we lack any data from one of them, as it was stated before.

Of note, we got a massive participation of scientists from different institutions related to the Trinity College Dublin.

University	Scientists
Trinity College Dublin	9
University College Cork	2
NUI Maynooth	2
Dublin City University	2
Limerick University	1
Queen's University Belfast	1
Universities Abroad	2



4.2 Feedback from online surveys

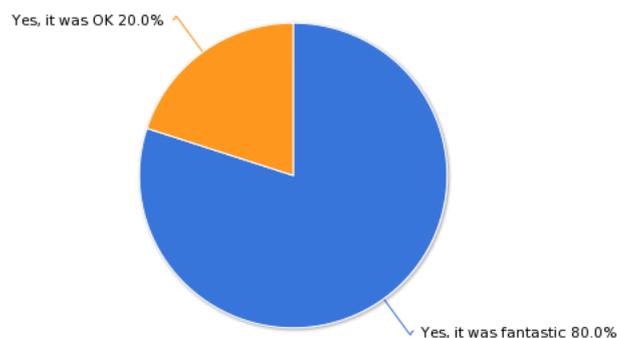
We asked all the scientists to fill in an online feedback survey after the event ended. After emailing reminders, 10 out of the 20 scientists filled it in.

Evaluation question: Do the scientists view their participation as a positive experience?

The scientists who responded to the post-event survey were very positive about their participation; 80% said it had been a 'fantastic' experience and the remaining 2 scientists said that 'it was OK'. None of them said that "it was a bit of a chore" or that "it was a waste of time".

All of the scientists said they want to do more public engagement, and 90% are now more confident in communicating their work. All of them would recommend it to a colleague and participate again.

1. Overall, did you enjoy taking part in the event?



"I loved taking part in the event; it was a really fun two weeks and I loved the challenge of trying to answer tricky and unusual questions. I want to do it all again!" - Scientist

Evaluation question: Have they / do they think they have improved their communication skills?

90% of the scientists thought participating made their communication skills better, and all of them said that they have acquired a better understanding of how students view science after taking part. 80% of the scientists who responded felt re-energised about their work. The scientists mentioned how they were learning through the event.

"I really enjoyed answering the students questions that they emailed! I m sure they learned loads, and so did I :)." - scientist

"I know for sure that all of the questions really got us scientists thinking. Not only this, but it got us to think in a new way. It forced us to think about our work from a different angle, and so has made our science better. In other words, you're all already scientists!" - Shane Mc Guinness, scientist

Moreover, 70% of scientists are now more confident in using online tools and 60% of the scientists that filled the survey said that they had devoted a reasonable amount of their time to the event (by disagreeing with the statement "I didn't take too much time to prepare for the event"). In fact, 40% of the scientists that completed the survey said they spent 3 to 4 hours a day participating in the event. Another 30% spent 2-3 hours a day and the remaining 30% spent between 1 and 2 hours on the event every day. The reality is that scientists spent an average of 2 hours a day in the site.

Outcome: Did scientists learn that young people are interested in their work and that they want to engage with scientists?

The scientists noted that they got some great questions from students, as well as less focused ones, and personal ones. Sometimes the load and/or intensity of questions seemed a little bit excessive.

"It was a great idea. Mostly the questions were very good, some students strayed outside the subject areas but other than that it was very well structured." - scientist

"I am optimistic about the next generation of scientists! Yes, positive outlook indeed." – Eoin O Colgain, scientist

"I love the questions - they're always fun and unusual!" – scientist

Outcome: Do scientists think that Public Engagement is enjoyable, worthwhile and useful to them, and that online engagement is as useful and enjoyable as offline methods?

When asked how *I'm a Scientist* compared to other forms of STEM engagement or dialogue they might have been involved in, most of scientists thought *I'm a Scientist* was much more direct, reached a wider student audience, was faster and more interactive, and students were much more willing to ask questions. Another important quality that they highlighted was the fact that it lasts longer than most outreach events, what enables a more profound engagement and a better understanding of what scientists are like and how science works.

"It lasted longer. Before I was engaged in hour long workshops which were similar to the half hour chats. But didn't have the slower, calmer, long-answer question format. I think it's beneficial that people can go away from an intense session of questioning and then come back for one last important query."- scientist

"I've had such a fun time taking part in this event. I loved the challenge of trying to answer your quirky and tough questions — even if it did leave my brain boggled most of the time :). — Sive Finlay, scientist

"It was more fast paced and direct - no hiding behind waffle or chitchat..."

"It's an innovative way to get kids involved and enthused about science."

"The interactive aspect was novel for me and the opportunity to also give answer to questions in a less frantic way via the website was good"

"It's a really fun way to communicate with lots of different students. The online format probably made it easier for some students to ask unusual and cool questions - it's easier than being labelled as the "science nerd" in the corner of the classroom." - scientist

Improvements to the event

Some scientists mentioned that the event took more time than they thought and that this fact might benefit the ones with the higher amount of free time or freedom to decide what to do in their work day. They also mentioned that schools should be better at keeping their commitment to take part of the event.

"I think there should be set hours for the ASK button - it was difficult to find time as it was to do the chats and questions, but when other scientists were constantly first to answer questions due to their free time, it was disheartening for me. I really enjoyed the event, but I think the time spent on it should be regulated, as it caters to scientists with lots of free time vs those who may have less but still wish to participate."

"As suggested in one of the chats, offline questions could be directed to only one person. It looks like the first to check wikipedia or google about the question wins. Perhaps, answers could be submitted to the website with a 24 hours deadline and then all answers by the scientists are displayed in the website. So it does not matter if I answer at 8am or at midnight and I don't copy the answers from other scientists. Good job overall!"

"Teachers really need to prepare their students for the chats and should put more commitment in participating once they've signed their class up for a chat as we had a lot of cancelled chats and also chats where students seemed to be left alone without a teacher."

Scientists also made suggestions on how the site can be improved, which we will work on to make it easier to navigate or chat:

"If a student uses the @MyName that this is highlighted in the stream for the person in question."

"It would be great that it avoids copy and paste from external pages."

"More distinctive names for students to be identified - trying to write longwinded names takes more time than it should."

"Instructions on accepting/rejecting the invitation were not clear. An email with a link set to "Accepted Live Sessions" would be nice so you can check easily when the next one is."

"Automatic colour coding on @handles and mod comments for ease of scanning. It all goes by so fast. Small profiles of scientist involved in the chat simply saying their areas of expertise."

"One thing to add in future might be email notifications when new comments have been added to one of your answers - it would make it easier to keep track of conversation threads started up by some of the questions."

Importantly, we should keep in mind that although we sent reminders, filling out the survey was self-selecting which can introduce bias. However, this is very hard to avoid.

4.3 Feedback from telephone interviews

We spoke to two scientists who took part in the event to hear first-hand about their experiences. Eoin O Colgain took part in the Space Zone and Sive Finlay was Lithium Zone winner.

Both said they enjoyed the experience. Sive's first words in the interview were: *"really enjoyed the whole event. It is a great experience for scientists and a very good way to learn how to communicate with the public."*

The two scientists said the event met their expectations. It was Sive's first time doing public engagement and she said that taking part in *I'm a Scientist* has encouraged her to do more public outreach.

Both of the scientists preferred ASK over CHAT, mainly because they could take as much time as they wanted to think about the questions and answer them properly. They also mentioned that the chats had been chaotic at times, but understood that this was part of the nature of the event.

"Challenging and focused"

Both of them got asked some very interesting and even stimulating questions. However, Eoin was concerned that most of the students in the Space Zone were asking more factual questions than conceptual ones. *"Students would often ask you about the number of moons of one planet, which you can look up in Wikipedia and doesn't leave too much space to interpretation."*

Sive noted the time commitment required, however this wasn't a problem for her, since she decided to spend more time on the event just because she was really enjoying it and took her time to write longer and thoughtful answers. Eoin said he spent around an hour a day on *I'm a Scientist*, what was more or less what he was expecting.

Eoin suggested improving the event by having a confirmation system for schools in the chats. Sive didn't make any additional suggestions. *"I really enjoyed the event, I think it run well and smoothly and that it is difficult to improve"*.

What the scientists get out of it

Sive felt *I'm a Scientist* helped with her communication skills and that she is now more confident about talking about her own research or the life of a scientist in general. Nevertheless, she is not so sure about how good she will be at speaking in public.

Eoin said that during the event he gained greater insights about the perception of science by the general public. He is currently working on a proposal to make Ireland a member state of CERN and this is of particular importance to him at the moment.

Both of them made new connections through the event. Sive was happy to see some familiar faces, as well as new ones, and to get to meet other scientists that are also interested in science communication and public outreach. Eoin mentioned how taking part in *I'm a Scientist* could also benefit his science career *"Scientists can use this to apply for much needed funding or European grants in the future."*

5.0 Schools evaluation

5.1 Breakdown of schools taking part

39 teachers from 33 different schools were given places in *I'm a Scientist*. All the class spaces were filled and we had to turn more than 10 schools away as we didn't have any places left. We expect a drop out rate of around a third due to timetable changes, exam preparation and illness. This was a good approximation for this event, since 14 (34%) of teachers who were given places didn't show up, what resulted in only 23 schools actually participating in *I'm a Scientist* November 2013.

School type

Of the initial 33 schools, 30 were secondary schools, and were 3 primary schools.

School location

OF the 33 schools that registered in the event, 5 were in Northern Ireland, and the remaining 28 were in the Republic of Ireland. The map shows the distribution of schools and scientists in Ireland. There's a large cluster of schools and scientists in Dublin but there are others spaced around the country.



Locations of scientists (pink) and schools (green) in Ireland in *I'm a Scientist* in November 2013

5.2 Teacher feedback from online surveys

We asked all the teachers to fill in an online feedback survey after the event ended. We emailed reminders out, but still only 3 teachers filled it in (out of the 27 teachers that took part). It is important to note that we have observed a gradual decrease on the participation of teachers on post event surveys over the years. This might very well be due to the fact that our feedback surveys haven't changed for a period of time and some of the teachers might feel that they are not adding any new input to the evaluation. We will consider implementing a new feedback survey for future events. As for the current evaluation, the anecdotal sample formed by the three teachers responding may give us an indication of the teachers' general views.

Outcome: Did teachers find the event enjoyable, interesting, informative, interactive and well organised?

The three teachers who responded would participate again and recommend taking part to a colleague.

"The 'live chat' facility was excellent."

"Pupils really enjoyed getting immediate answers to questions"

"We had our interactive chat session today and it went extremely well, the girls were so engaged and learned a lot. One of the girls emailed me on a copy of all the conversations afterwards and I was really impressed how the scientists could relate their answers to the students' lives so quickly and easily. Thanks again for a fantastic group of lessons" - Fiona Mc Keever, teacher

Outcome: How did teachers themselves benefit from taking part?

The teachers who gave feedback were satisfied with the event, two of them found it easy or very easy to implement, but one of them thought it was "quite difficult to start, but easy once I was used to it". The three of them are now more aware of their students' attitudes to science. However, only one agrees that he is now more confident in using online tools in lessons and in teaching the scientific method. When asked what the single most important outcome for them as a teacher was, one of them stated the following:

"My pupils are more aware of careers in science and options for their future."

"To get my students more interested in science and see it as a career they might pursue."

Outcome: How do the teachers think their students benefited from taking part?

The three teachers who responded said their students enjoyed the event (two of them strongly agreed). Two out of the three teachers stated that their students are more aware of careers in science, the other one is not sure about this point. All of the teachers that filled the survey think that their students have a more positive view of science, but only two of them said their students are more confident in asking questions about science. Finally, two out the three teachers consider that their students are more excited about science.

5.3 Teacher feedback from telephone interviews

We spoke with Sandra Byrne, a teacher who had classes taking part in the Lithium Zone of this event to find out what she and her students thought of the experience. She enjoyed the event as a teacher and said she would take part again: *“This is my second year taking part in I’m a Scientist and I was really looking forward to it.”*

Sandra said that this being her second year participating in *I’m a Scientist*, she knew what to expect and she was quicker to encourage students to go into the website at home. She also mentioned how a new investment in IT equipment in her school had made this year’s event even more enjoyable and easy to run. She explained how students got really involved from the very start, particularly a couple of quiet girls that turned out to be very interactive online, to the point that one of them got nominated as student winner.

“This event offers the opportunity to do something different; an activity that brings out new strengths and abilities”. Sandra Byrne. Teacher

She found the teacher packs really valuable: *“You offer very good quality materials that are really useful for us teachers”*. She also said that the website was very intuitive and easy to navigate for her and her students and she found it difficult to choose her favourite section of the website, as she put it *“it is hard to choose, I liked all of them!”* Still, she thought the scientist’s profile pages were really relevant, as well as the students’ profile pages.

Sandra felt that the main strength of the event was the fact that students get *“to talk to real scientists, currently working in research and that they realise that they are real people, with real lives and feelings.”* She emphasized the enthusiasm and dedication that the scientists put in the event and how this is crucial to get the students engaged.

She used the event with her year 5 and year 7 students (age 9-11), who she said are already asking her whether they will have the chance to be part of *I’m a Scientist* in the next school year.

When asked for improvements all she mentioned was that she experienced some problems joining a live chat using her teacher profile data and that she ended up using one of her students’ name and password.

5.4 Student feedback from online surveys

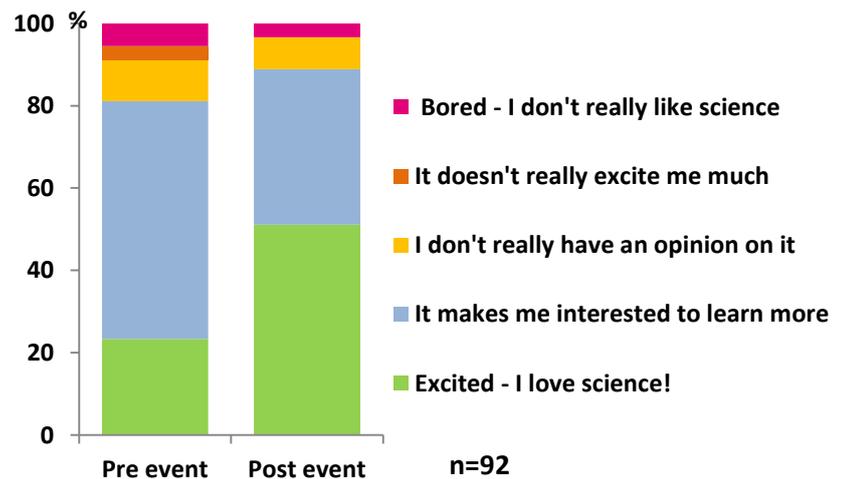
In order to gain an understanding of what was the students' attitudes towards science before the event; we included a short and compulsory pre-event survey in the students' profile that they needed to complete when they get registered. The survey included four simple questions asking about their preference for science in school and their willingness to look for a science related job in the future. We then asked students to fill the exact same survey after the event. This allows us to measure whether the event has had any effect on their perception of science.

Even though completion of the surveys might be (near unavoidably) self-selecting towards the keener students, comparing pre and post event surveys lets us present more robust data. When we matched this two surveys we found out that only 92 students (7% of 1,247 students that took part of *I'm a Scientist*) had filled in both surveys. This might be a small sample, but it allows us to get an approximate idea of whether *I'm a Scientist* renders an attitudinal change in the students that participate in it. Importantly, pre event data from the total number of students that filled in the survey very closely correlates with the pre-event data of this 92 student sample.

Evaluation question: Has the event changed students' perceptions of science?

1. How does school make students feel about science?

I'm a Scientist really got the students excited about science! Before taking part in the event, only 23% of students said they loved science, but this number increased up to 51% after the event. On the other hand, the number of students that don't feel really excited about science or think it is boring decreased from 9% to 3%.



2. Are the students planning to choose a science subject at the next stage of their education?

In the pre-event survey, 66% of the students were absolutely certain or very inclined to choose a science subject next year. However, this percentage raised up to 71% after participating in *I'm a Scientist*.

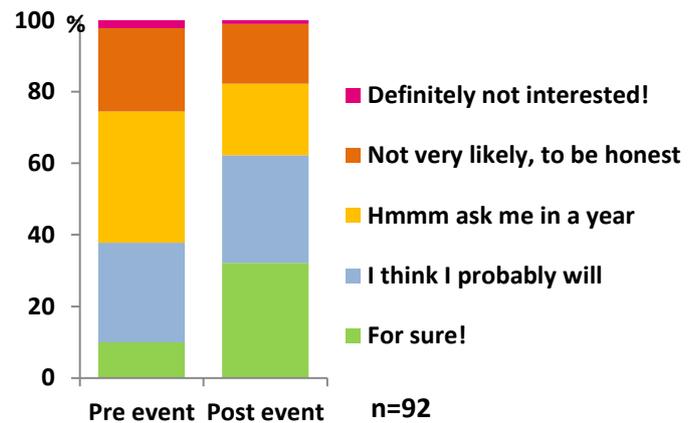
"Thanks guys for talking to me really helped me make my decision for the leaving cert."— sarahlawless, student

3. Do students think jobs involving science are interesting?

The majority of students that completed the surveys already thought that jobs involving science are at least fairly interesting before taking part in the event, but there was still room for improvement and the percentage of students that considered science related jobs **very** interesting saw a big increase from 36% to 62%.

4. How likely are students to look for a job that uses their science knowledge and skills?

Before taking part in *I'm a Scientist*, a big portion of the students (37%) couldn't decide whether they would try to look for a job that uses their science skills and only 10% said they were sure that they would look for this type of job. However, the event seemed to be the boost that students needed to be more confident about looking for a science related job. After *I'm a Scientist*, most of the students (68%) said that they would certainly or very probably look for a job that uses their science knowledge.



"Honoured to have taken part. The future of science is in very good hands with you guys!" – scientist

Outcome: The students find the event enjoyable, interesting, informative, interactive and well organised.

Throughout the event, students left several comments that stated clearly how they were enjoying and learning at the same time. They liked that the event was so interactive and that they had an active part at every step: asking, commenting, chatting and voting.

"thanks, great speaking to you!! Thanks for giving such Genuine answers" – edonoghue, student

"thank you now i can't stop asking my dog loads of questions !!!!!!" – ladybird117, student

"It makes so much more sense now! Thank you, my brains not mushed anymore from thinking about it!" – maher123, student

6.0 Appendices

Appendix 1: Teacher pre-event survey

1. How did you hear about *I'm a Scientist*? (tick all that apply)

- I've taken part before
- From another teacher
- From my local area science co-ordinator
- Found the site in an internet search
- Twitter
- Email from IAS as I'm signed up for Debate Kits
- Email, newsletter or online article from a science organisation
- Paper publication from a science organisation
- Through Science Foundation Ireland
- Other (please explain) Please enter an 'other' value for this selection.

2. What appeals to you most about *I'm a Scientist*?

3. Please rank the following outcomes in terms of importance for you as a teacher (the most important at the top to least important at the bottom).

Drag items from the left-hand list into the right-hand list to order them.

<input type="text"/>	Students are more excited about science
<input type="text"/>	Students are more aware of careers in science
<input type="text"/>	I am more confident in teaching the scientific method
<input type="text"/>	Students are more confident in debating science issues
<input type="text"/>	I am more confident in using online tools in lessons
<input type="text"/>	Students have a more positive view of science
<input type="text"/>	I am more aware of cutting edge science
<input type="text"/>	Students are more confident in asking questions about science
<input type="text"/>	I am more aware of the insights my students have into science
<input type="text"/>	Students have a more nuanced view of science
<input type="text"/>	I will gain ideas for teaching in the future

4. Is there anything else not mentioned in Question 3 that you're expecting as an important outcome?

5. How are you planning to run *I'm a Scientist*?

- In lessons as part of the scheme of work
- In lessons as enrichment
- Outside lessons as part of a themed day/week
- Outside lessons in a STEM club
- Other - tell us how Please enter an 'other' value for this selection.

6. What year group(s) of students are you planning to run *I'm a Scientist* with?

- Third Class
- Fourth Class
- Fifth Class
- Sixth Class
- First Year
- Second Year
- Third Year
- Transition Year
- Fifth Year
- Sixth Year
- STEM Club
- Other Please enter an 'other' value for this selection.

7. Have the class(es) you're running *I'm a Scientist* with taken part in any of the following science enrichment projects?

- CREST Awards
- School visit from a scientist
- I'm a Scientist*, Get me out of here! previously
- Visit to a local science centre/museum
- Visit to a science festival
- Other - tell us what Please enter an 'other' value for this selection.

8. Have you taken part in any of the following science enrichment projects?

- CREST Awards
- School visit from a scientist



- I'm a Scientist, Get me out of here!* previously
- Visit to a local science centre/museum
- Visit to a science festival
- Other - tell us what Please enter an 'other' value for this selection.

9. How many lessons do you plan to spend on this project?

- 1
- 2
- 3
- 4
- 5+

10. Are you planning on also running other major science enrichment activities over the next few months? If yes, tell us what

- No
- Yes - tell us what Please enter an 'other' value for this selection.

Appendix 2: Scientist pre-event survey

1. How did you hear about *I'm a Scientist*

- From a previous participant
- From a university/research institute
- Through the company I work for
- From Science Foundation Ireland
- From a professional association (e.g. learned society)
- From a STEM outreach organisation
- Twitter
- Found the site in an internet search
- Other (please explain) Please enter an 'other' value for this selection.

2. What appeals to you most about *I'm a Scientist*?

3. Please rank the following outcomes in terms of importance for you (the most important at the top to least important at the bottom).

Drag items from the left-hand list into the right-hand list to order them.



<input type="checkbox"/>	Being more aware of what other scientists do
<input type="checkbox"/>	Becoming more confident in communicating my work
<input type="checkbox"/>	Developing links with other scientists
<input type="checkbox"/>	Students becoming more engaged with science
<input type="checkbox"/>	Having a better understanding of how students view science
<input type="checkbox"/>	Winning €500 for a science communication project
<input type="checkbox"/>	Becoming more confident in using online tools
<input type="checkbox"/>	Students becoming more aware of careers in science
<input type="checkbox"/>	Becoming re-energised about my work

4. How confident do you feel about communicating with young people?

- Very
- Reasonably
- A bit
- Not at all

5. How confident do you feel about discussing social, ethical and environmental implications of your work with members of the public/people outside your field?

- Very
- Reasonably
- A bit
- Not at all
- Don't know

6. Have you previously taken part in any science engagement projects? (Tick all that apply)

- Visit to a local school
- Science festival
- University/institute organised events
- Other - tell us what Please enter an 'other' value for this selection.

7. Are there any other comments you would like to add?

Appendix 3: Teacher post-event survey

1. To what extent do you agree with the following outcomes from taking part?

1. To what extent do you agree with the following outcomes from taking part?	Strongly agree	Agree	Disagree	Strongly disagree	Don't know
My students enjoyed the event	<input type="radio"/>				
My students are more excited about science	<input type="radio"/>				
My students are more aware of careers in science	<input type="radio"/>				
My students are more confident in debating science issues	<input type="radio"/>				
My students have a more positive view of science	<input type="radio"/>				
My students are more confident in asking questions about science	<input type="radio"/>				
My students have a more nuanced view of science	<input type="radio"/>				
I am more confident in using online tools in lessons	<input type="radio"/>				
I am more confident in teaching the scientific method	<input type="radio"/>				
I am more aware of cutting edge science	<input type="radio"/>				
I am more aware of my students' attitudes to science	<input type="radio"/>				
I found the event easy to implement	<input type="radio"/>				
Overall I was satisfied with the event	<input type="radio"/>				

2. What was the single most important outcome for you as a teacher?

3. Would you participate again?

- Yes
 No

4. Would you recommend taking part to a colleague?



- Yes
- No

5. How did you run *I'm a Scientist*?

- In lessons as part of the scheme of work
- In lessons as enrichment
- Outside lessons as part of a themed day/week
- Outside lessons in a STEM club
- Other - tell us how Please enter an 'other' value for this selection.

6. How many lessons did you spend on *I'm a Scientist*?

- 1
- 2
- 3
- 4
- 5+

7. From a technical viewpoint, how did you find using the site?

- Difficult throughout
- Quite difficult to start but easy once I was used to it
- Quite simple and straightforward
- Very easy
- I didn't use the site

8. As a teacher, what would you do differently next time (if anything)?

9. How useful did you and your students find the following parts of the site?

9. How useful did you and your students find the following parts of the site?	Very useful	Quite useful	Not that useful	Not at all useful	We didn't use it
ASK - students asking questions	<input type="radio"/>				
CHAT - live chat	<input type="radio"/>				
VOTE - students voting	<input type="radio"/>				
Live chat booking form	<input type="radio"/>				

9. How useful did you and your students find the following parts of the site?	Very useful	Quite useful	Not that useful	Not at all useful	We didn't use it
Staffroom	<input type="radio"/>				
/Teachers (the teachers' area)	<input type="radio"/>				
Teacher FAQ	<input type="radio"/>				

10. Which parts of the teacher pack did you use, or plan to use in future teaching?

10. Which parts of the teacher pack did you use, or plan to use in future teaching?	Used in full	Picked bits out	Did not use	Plan to use later
Lesson 1: You're the Judges!	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lesson 2: Meet the Scientists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lesson 3: Live chat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lesson 4: Drugs in Sport Debate Kit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. How did you find the teacher briefing notes?

- Very useful - they told me everything I needed to know
- Quite useful - they covered most points but had some gaps
- Not very useful - I had lots of questions after reading them
- Not at all useful - a waste of paper
- I didn't read the briefing notes
- I didn't receive any briefing notes

12. If you used the CHAT 'live chat' facility, what worked well about it? How do you feel it can be improved?

13. If you didn't book a live chat, can you tell us why?

14. What do you think about the number of emails you received in the run up to and during the event?

- Just right

- Not enough - I would have liked more regular emails
- Too many - the emails were too regular

15. How useful was the content of emails you received?

- Very useful - contained everything I needed
- Quite useful - contained some useful information
- Not particularly useful - didn't contain much useful information
- Not useful - I didn't use any information in them

16. Can you suggest any information you feel was missing from emails about the event?

17. Is there anything else you would like to add, such as things you particularly liked or disliked about the event, or what you would change about the event?

Appendix 4: Scientist post-event survey

1. Overall, did you enjoy taking part in the event?

- Yes, it was fantastic
- Yes, it was OK
- Not really, it was a bit of a chore
- No, it was a waste of time

2. To what extent do you agree with the following outcomes from taking part?

2. To what extent do you agree with the following outcomes from taking part?	Strongly agree	Agree	Disagree	Strongly disagree
I am more confident in communicating my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a better understanding of how students view science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am re-energised about my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have developed links with other scientists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am more confident in using online tools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to do more public engagement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am more aware of what other scientists do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. To what extent do you agree with the following statements about *I'm a Scientist*?

3. To what extent do you agree with the following statements about <i>I'm a Scientist</i> ?	Strongly agree	Agree	Disagree	Strongly disagree
It didn't take too much of my time to prepare for	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was able to engage and communicate with the students effectively	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It improved my communication skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The students seemed to enjoy the experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall I was satisfied with the experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. How do you think it compared to other forms of science engagement or dialogue you may have been involved with?

5. Would you participate again?

- Yes
- No

6. Would you recommend it to a colleague?

- Yes
- No

7. How useful did you find the following parts of the site for communicating with students??

7. How useful did you find the following parts of the site for communicating with students??	Very useful	Quite useful	Not that useful	Not at all useful
CHAT - live chat with students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASK - Q+A with students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My scientist profile	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. How did you find the scientist briefing notes?

- Very useful - they told me everything I needed to know



- Quite useful - they covered most points but had some gaps
- Not very useful - I had lots of questions after reading them
- Not at all useful - a waste of paper
- I didn't read the briefing notes
- I didn't receive any briefing notes

9. From a technical viewpoint, how did you find using the site?

- Difficult throughout
- Quite difficult to start but easy once I was used to it
- Quite simple and straightforward
- Very easy
- I didn't use the site

10. How do you think the CHAT facility could be improved?

11. Approximately how long did you spend per day, on average, participating in the event?

- Up to 1 hour a day
- 1-2 hours a day
- 2-3 hours a day
- 3-4 hours a day
- More than 4 hours a day (please specify) Please enter an 'other' value for this selection.

12. What do you think about the number of emails you received in the run up to and during the event?

- Just right
- Too many - the emails were too regular
- Not enough - I would have liked more regular emails

13. How useful was the content of emails you received?

- Very useful - contained everything I needed
- Quite useful - contained some useful information
- Not particularly useful - didn't contain much useful information
- Not useful - I didn't use any information in them

14. Can you suggest any information you feel was missing from emails about the event?

15. If you used twitter during the event, how useful did you find it for the following?



15. If you used twitter during the event, how useful did you find it for the following?	Very useful	Quite useful	Not very useful	Not at all useful	I didn't use it
Interacting with fellow scientists	<input type="radio"/>				
Keeping up to date with how the event's going overall	<input type="radio"/>				
Sharing questions with scientists in different zones	<input type="radio"/>				
Reporting and hearing about problems	<input type="radio"/>				
Letting colleagues and friends know about the event	<input type="radio"/>				

16. Is there anything else you would like to add, such as things you particularly liked or disliked about the event, or what you would change about the event?

Appendix 5: Student pre and post event survey

1. What is your *I'm a Scientist* username? ***This question is required.**

2. How does school make you feel about science? ***This question is required.**

- Excited - I love science!
- It makes me interested to learn more
- I don't really have an opinion on it
- It doesn't really excite me much
- Bored - I don't really like science

3. Are you planning to choose a science subject at the next stage of your education? ***This question is required.**

- Yes; bring it on!
- I probably will
- Hmm not sure...
- I probably won't
- No thanks!

4. Do you think jobs involving science are interesting? ***This question is required.**



- Yes - very!
- Yes - fairly
- I don't really know
- No - not really
- No - definitely not!

5. When you finish your education, how likely are you to look for a job that uses your science knowledge and skills? *This question is required.

- For sure!
- I think I probably will
- Hmm ask me in a year...
- Not very likely if I'm honest
- Definitely not interested!

