

I'm a Scientist & I'm an Engineer

Ireland 2015

Evaluation Report



Introduction

I'm a Scientist and *I'm an Engineer* follow the same format. *I'm a Scientist* is a free X Factor-style competition for scientists, where students are the judges. Scientists and students talk online. They break down barriers, have fun and learn.



Scientists create online profiles: drugn15.imascientist.ie/profile/sineadbalgobin/ & metren15.imanengineer.ie/profile/nicolagreene/.

School students get to ASK questions and challenge the scientists over intense, fast-paced online live CHATS. They VOTE for their favourite to win a prize of €500 to communicate their work with the public.

The events are split into zones of 5 scientists and around 350 students each. *I'm a Scientist* zones are either themed (eg Drug Synthesis, Food) or general (named after elements, with a broad mix of 5 scientists). *I'm an Engineer* zones are themed around engineering areas (eg Boole Zone about mathematics as the base for computer programming), and the general ones are named after units of the International System.

I'm a Scientist and *I'm an Engineer* are global events; also running in the UK, Australia, Malaysia, Kenya, the US and soon in Spain and Vietnam.

Our **key findings** in 2015 were:

- **We have improved I'm an Engineer audience numbers since last year.** In 2014 we ran I'm an Engineer for the first time in Ireland and we got an average of 208 students logged in per zone. In 2015, we have even exceeded our target of 330 students per zone, with 377 students in the Boole Zone, and 350 in the Metre Zone.
- **We also have improved the diversity of the scientists and engineers taking part.** 10% of the participants were from a black or minority ethnic background, and we got a perfect gender balance in both I'm a Scientist and I'm an Engineer.
- **90% of students think they know more about the skills required to be an engineer,** the type of people who work as engineers, and engineers' role in society after taking part in I'm an Engineer.

1. Key figures

We ran six zones: Three I'm a Scientist themed zones (Nanoscience, Drug Synthesis and Food Science), one I'm a Scientist general zone (Nitrogen Zone), with a mix of scientists from different areas, one I'm an Engineer themed zone around computing (Boole Zone) and one general engineering zone (Metre Zone).



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	I'm a Scientist Ireland			I'm an Engineer Ireland		
	Historic zone average	2015 zone average	2015 total	Historic zone average	2015 zone average	2015 total
Scientists	5	5	20	5	5	10
Registered students	355	409	1,636	286	364	728
Schools	11	12	48	10	14	24
% of active students *	84%	91%	-	86%	86%	-
Questions asked	560	411	1,646	497	379	758
Questions approved	250	192	768	231	236	472
% questions approved	44%	47%	-	48%	50%	-
Answers given	553	447	1,788	563	438	876
Comments	63	35	140	31	22	44
Votes	280	326	1,440	216	251	502
Live chats	15	17	68	13	14	28
Lines of live chats	3,926	2,551	10,204	3,290	3,992	7984
Chat lines per chat	262	150	-	229	292	-

*ASKed a question, CHATed with scientists/engineers, commented, or VOTEd for their favourite

2. Audience

Primary Audience:

Our target audience are students of Primary Level, Junior Cycle (Secondary Level) and Senior Cycle (Secondary Level). The students are given access to the site by their teachers, who we promote the event to.

During these two events our primary (officially signed up) audience was composed of:

20 scientists + 1,636 students = **1,656 people in I'm a Scientist**

10 engineers + 728 students = **738 people in I'm an Engineer**

The number of registered students keeps growing; especially in IAE with 364 registered students per zone in 2015, compared to an historic average of 286.

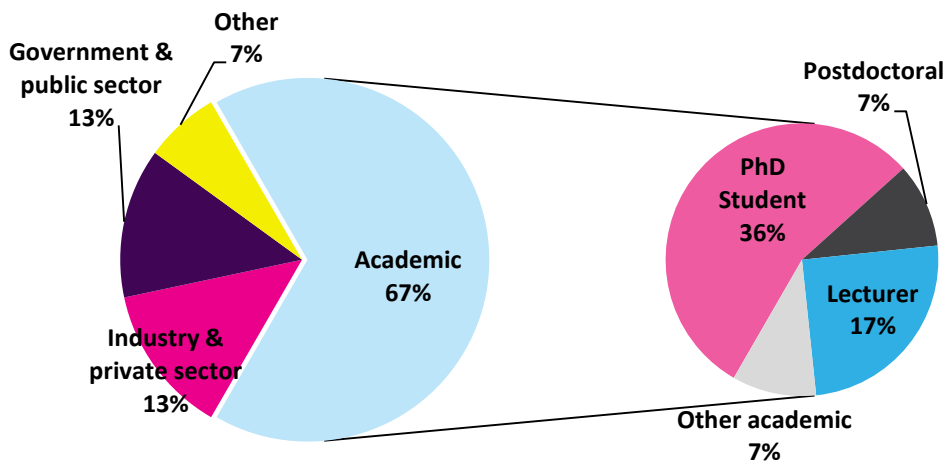
Secondary Audience:

Additionally, over 151,000 people viewed imascientist.ie and 5,200 imanengineer.ie in 2015.

3. Scientists and engineers

It is very important to us to get a diverse group of scientists and engineers taking part (in terms of gender and ethnicity), so that all students can find a relatable role model to inspire them. 10% of the participants were from a black or minority ethnic background, and we got a perfect gender balance in both I'm a Scientist and I'm an Engineer. Nine women (out of 20 participants) taking part in I'm a Scientist and six women (out of 10 participants) in I'm an Engineer. Continuing the balance, 50% of winners were female.

Scientists and engineers represented cutting edge science and technology across Ireland.



Place of work	Number of candidates
University College Cork	4
University College Dublin	4
Tyndall National Institute	4
Teagasc	3
NUI Galway	2
Dublin City University	1
Queen's University Belfast	1
Irish Aviation Authority	1
MaREI - Beaufort Facilities	1
Waterford Institute of Technology	1
University of Manchester	1
Our Lady's Hospital	1
Private Companies	6

Stereotypes of scientists and engineers were smashed; students got inspired to study STEM subjects, and get involved in science and engineering:

"I thought scientists looked like they do in the film Flubber and experimented on aliens or weird stuff but when I found out you liked Taylor Swift I realised you are more down to earth and not like mad scientist 😊" – GraceWilsann, student

"I think that experiencing science is way more interesting than just watching it" – KiNtsune, student

“We have a school full of engineer wannabes now :-)” – teacher at Boodyke N.S. School

Scientists and engineers learned about what students think about their work, and saw their research from a different perspective:

“I was happy to answer questions about my own experiences (...) and about what it means to me; it was the first time I had ever really thought about those, and being able to reflect on my choices has been pretty inspirational!” – Sinead Balgobin, scientist

We asked all the scientists and engineers to fill in a feedback survey. 50% of them filled it in. **All responders felt more confident about communicating their research and thought they had improved their communications skills. 94% of them want to do more public engagement.**

4. Evaluation

There are two main strands to our evaluation:

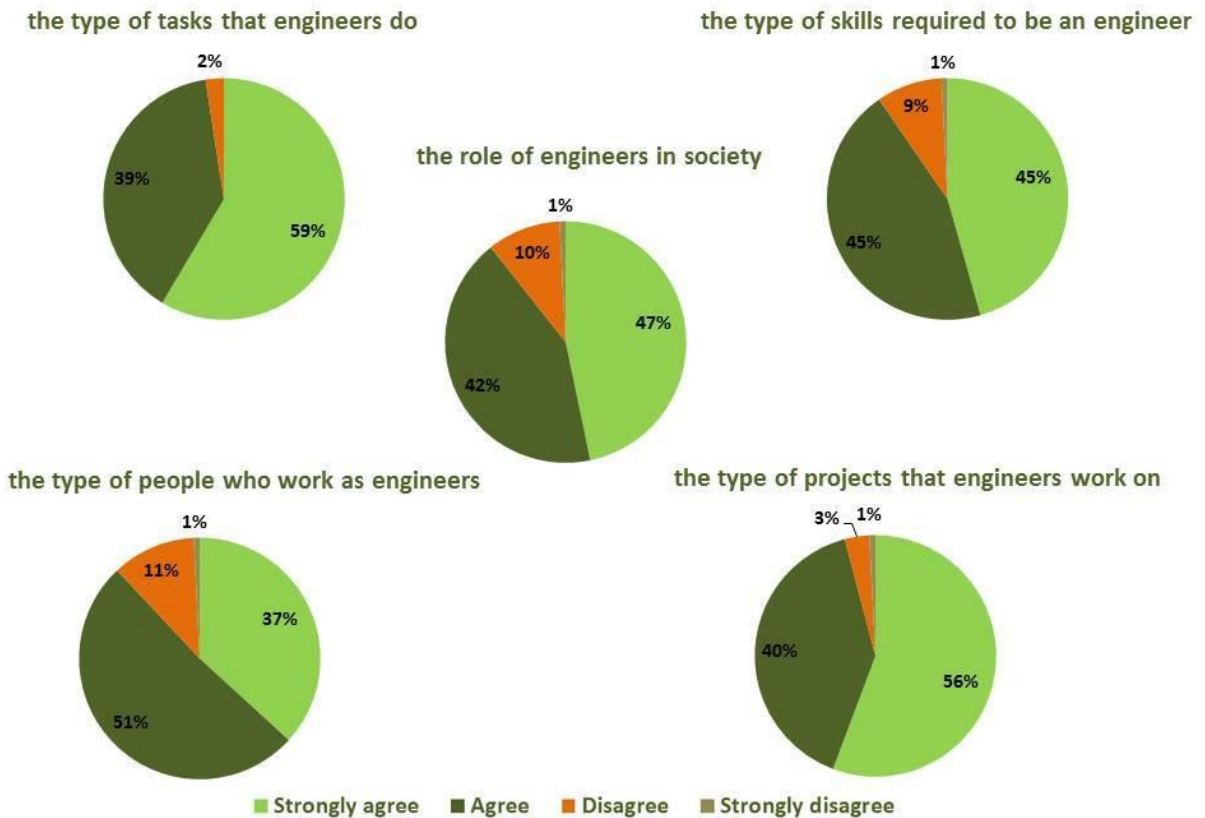
- **Formative** - we continually review our activities and look for improvements in what we do and how we do it. To this aim we use web metrics, observation of schools during the event (*I’m a Scientist* Director Shane McCracken visited one of the schools in Belfast while they took part in a chat). Formative evaluation helped us find out:
 - Tablets work better in chat when held in portrait position
 - It takes a primary school class about 20 minutes to log in and be ready for a live chat, which is more than we had predicted
 - Passwords with upper and lower case letters are difficult for primary schools; we will consider to use only lower case or upper case letter in passwords.
 - When people google the event name, they sometimes land on the UK sites. We need to make it easier for them to be re-directed to the right Irish site.
 - We need to implement the mobile site design further, the log in module isn’t in the right place on some tablets.
- **Summative** - every zone we run is measured in great detail and most is published in zone reports.
I’m a Scientist zone reports: about.imascientist.ie/category/zone-reports/
I’m an Engineer zone reports: imanengineer.ie/category/zone-reports/

With the help of online surveys we look at scientist and engineer public engagement behaviour, as well as students attitudes to science and engineering.

We have improved *I’m an Engineer* student surveys to better evaluate how the activity affect their understanding of what being an engineer is, but the limited response rate and the small number of zones in *I’m an Engineer* Ireland (two zones in 2015), didn’t allow us to analyse how Irish students change their understanding of engineering. Nevertheless, analysis of the responses from 131 students who took part in June 2015 in the UK (a 6 zones’ event) told us that almost all the students thought they knew more about the type of tasks that engineers do after taking part. Only around 10% of students didn’t think they knew more about the skills required to be an engineer, the type of people who work as engineers, and engineers’ role in society.

See graph on next page and read more at : about.imanengineer.org.uk/2015/07/28/how-does-im-an-engineer-affect-students-understanding-of-engineering/

Since taking part in I'm an Engineer, you know more about...



5. Media coverage

We had extensive social media coverage by scientists, engineers and teachers posting about their experiences on twitter. We also covered the event in our team's twitter line and encouraged our event moderators to do the same. Funders and the institutions where candidates worked at also helped keeping the buzz on social media.

Hashtags were used during the events (#IASIE and #IAEIE) to allow the quantification of our impact in twitter. There were a total of 257 #IASIE tweets, of which more than 190 were from scientists, teachers and other members of the Irish I'm a Scientist community, but not the core I'm a Scientist team.

Historic list of #IASIE Tweets at <http://bit.ly/1JVBdly>



6. Challenges and future directions

Our objective was to run eight zones (five IAS, three IAE), but we have run only six (four IAS, two IAE). The SFI gave us funding to run four zones and we needed to find match funding for the remaining four, however we were only able to raise funding for two zones, falling two zones behind the objective.

This was mainly due to a delay in the resolution of our next bid for funding from the Wellcome Trust (postponed until February 2016), and the difficulty of finding links with private companies keen to fund public engagement activities.

We are looking at a number of strategies for the increased sustainability of our projects:

- Become more efficient and make the cheaper to run
- Diversify the funding base to include:
 - Universities – we will work to build partnerships between outreach and widening participation teams to help fund IAS activity
 - Other funding organisations such as the Wellcome Trust, Royal Society of Chemistry will continue to support our work
 - European Commission H2020 and other new public sources of funding.
 - Private companies – we are developing a new business plan
 - Schools – we intend to keep the event free for state maintained schools but when application levels allow we will charge fee paying schools, and other schools who want to involve large numbers of students
 - Advertising – we are looking to display advertising to non-registered users of the site to generate some income to help cover hosting costs