



Big Data Debate Kit

Evaluation Report

Distributed September 2014 - March 2015

Evaluated June 2015

- 96% of teachers confirmed that their students are now aware of how Big Data can be used in Biology and Biomedicine.
- 43% of the teachers who requested the kit have used it this school year.

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1. Introduction

This debate kit was funded by the [Biotechnology and Biological Sciences Research Council](#) and [Science Foundation Ireland](#). Gallomanor collaborated with BBSRC to research the kit, and asked for advice from teachers to ensure its educational suitability.



The kit discusses whether we should sequence the genomes of one million people, to find out more about living longer and healthier lives. This question sets ground for the discussion of all the issues surrounding Big Data. The kit shows students how complex this topic is, and encourages them to explore and think about some of the main concerns surrounding the ethics of Big Data.



All the facts in the kit were researched and we linked teachers to a page with references and additional information relating to it.: debate.imascientist.org.uk/big-data/

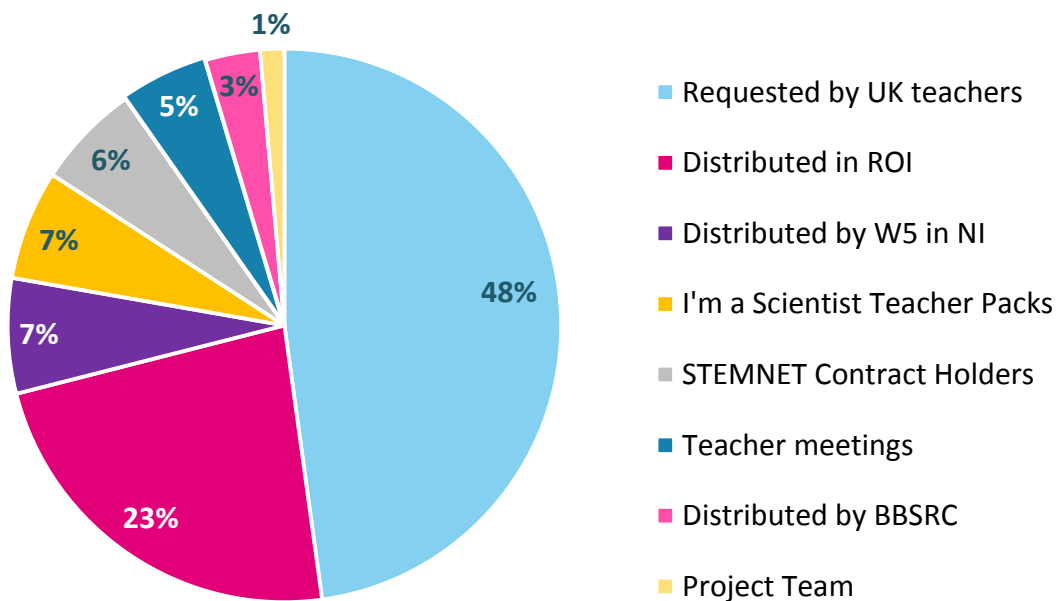
2. Distribution

2,000 kits were printed in September 2014: 746 were posted out to UK teachers who requested them, 362 were posted to schools in the Republic of Ireland (ROI), and 105 were distributed in Northern Ireland (NI) through [W5-online](#) STEMNET Contract Holder.

On top of these, 80 kits were distributed in teacher meetings and conferences, 50 were distributed by the BBSRC and 22 were distributed among the project team. Debate kits were also sent to 100 teachers who took part in *I'm a Scientist, Get me out of here* in November 2014 in the teacher packs. Finally, we sent kits to 95 STEMNET Contract holders to distribute them in their region (see chart below).

A PDF version of the debate kit is also available to download from our website: debate.imascientist.org.uk/files/2012/10/IAS-Big-Data-all-in-one.pdf. Up to date, the Big Data Kit has been **downloaded by 174 different people**.

Debate Kit Distribution



3. Usage

It is very important for us to know if kits are used by teachers.

3.1 Usage – how many kits were used?

In order to get an accurate report of how many kits were used we asked a random sample of 100 teachers who'd requested a Big Data Debate Kit if they had used the kit. We then followed up non-responders with reminder emails, and a phone call.

At the time of writing, **46 out of the randomised sample of 100 teachers have responded** to tell us if

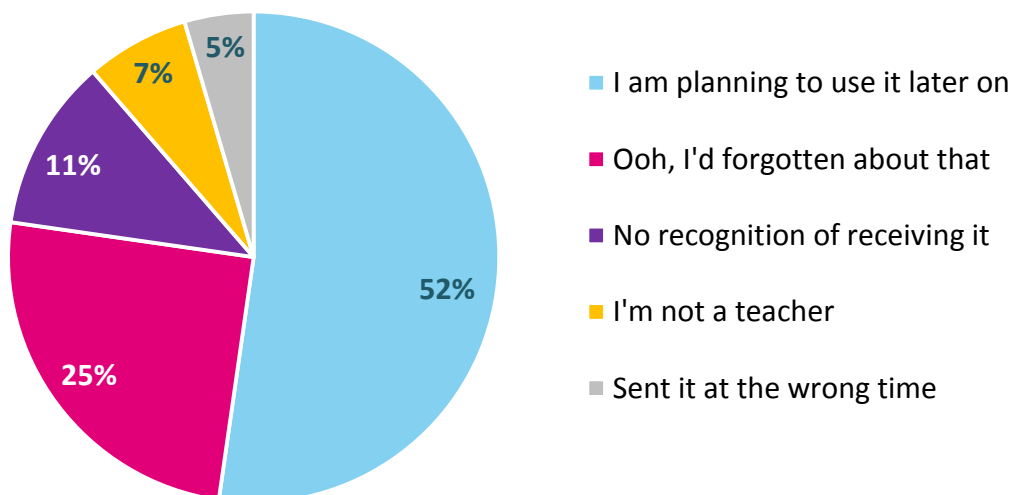
they've used the debate kit: **20 (43%) of them said they had used the kit.**

By extrapolating the percentage of randomly selected responders who'd used the kit up to the 746 teachers who requested kits, 43% of 746 gives an estimate of 324 kits used by the teachers who requested them. If we estimate that at least 21% of the other kits distributed to different teachers were used (half of the usage percentage of requested kits), 21% of 814 is 171. Therefore, this very broad approximation gives as an estimate of 495 kits used.

43% of teachers that requested the kit have used it already.

3.2 Usage – why some of the kits didn't get used?

All teachers who had requested a Big Data Debate Kit – not only the randomised control group – were sent the email in appendix 1 to ask them if they had used it. Teachers who clicked on the NO link were taken to a survey asking them why they hadn't used kit and calling upon comments or suggestions. Here are the responses from the 44 teachers told us why they hadn't used the Kit:



52% of the teachers that hadn't already used the debate kit were planning to use it later.

We asked teachers who said the kit was sent at the wrong time, when it would be best for us to send a debate kit. One of them told us that it was difficult to know, due to changes in the curriculum. Another said that they had already covered the topic when they received the Kit.

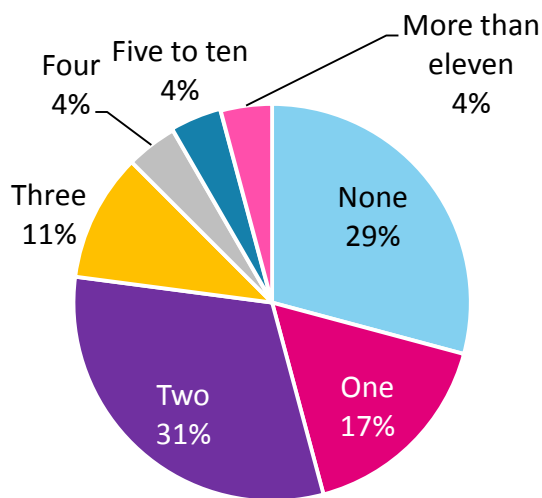
3.3. Usage – how were the kits used?

48 teachers who said they'd used the Big Data Debate Kit filled out the feedback survey about it and responded to certain questions on how they had used the kit.

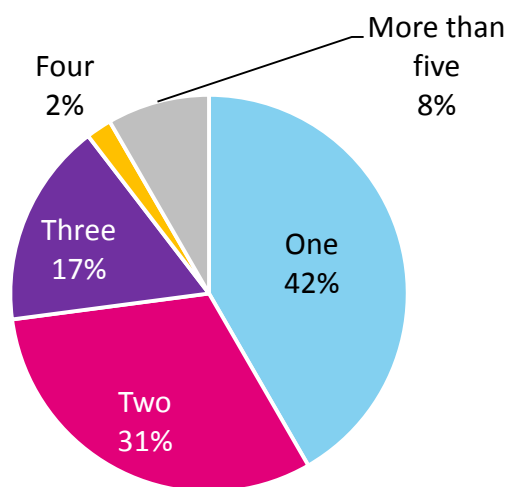
The responses were very positive: 71% of them had already lent the kit to at least one colleague. More than half of the teachers (58%) said they had used the kit more than once, **88% of them plan to use it again, and none said they don't intend to use it again in the future.**

We linked teachers to a page with references and additional information relating to it. **The references page was visited by 85 different users.**

How many teachers have you lent the Kit to?



How many times have you used the Kit?



56% of teachers used the kit several times and 71% lent it to their colleagues.

In the classroom, Big Data Debate kits were used in science lessons throughout a wide range of year groups, from Year 7 primary classes to sixth form classes. The kit was also used to run teacher training sessions, as well as to prepare students for exams:

E *Content fits really well with the ethical questions on GCSE exams and the case study coursework.”–Teacher*

E *New qualifications in Scotland include lots of references to current research particularly for Advanced Higher biology, so this sort of debate has been very useful in framing discussion.”– Teacher*

4. Aims and achievements

In the same feedback survey, we asked teachers if they agreed with certain outcomes of using the debate kit. We also asked them to rate the kit's content and design.

The kit received many positive comments and praise from the teachers:

	Excellent	Pretty good	OK	Not great	Rubbish
Overall	47.9%	52.1%	0.0%	0.0%	0.0%
Content	47.8%	50.0%	2.2%	0.0%	0.0%
Design & format	54.2%	37.5%	8.3%	0.0%	0.0%

E *Interesting, stimulating, topical issues which help broaden the mind” – Teacher*

E *It improves confidence levels of students and their use of technical language” – Teacher*

E *Very easy to facilitate and time saving in terms of research. It is reliable information.” – Teacher*

When asked teachers about the main outcome of the Big Data Debate Kit, the most voted options (selected by more than half of the teachers) were that it:

- promotes team work
- promotes the engagement of all the students
- contains recent and up to date information
- offers a new teaching approach
- introduces certain bioethical issues
- Students are better at seeing all sides of an issue and sharing them with the class

48% of teachers thought the kit is overall “excellent” and the remaining 52% thought it is “pretty good”.

4.1 Specific outcomes related to Big Data

In the feedback survey, we asked the teachers to what extent they agree with a number of specific outcomes of using the Big Data Debate Kit.

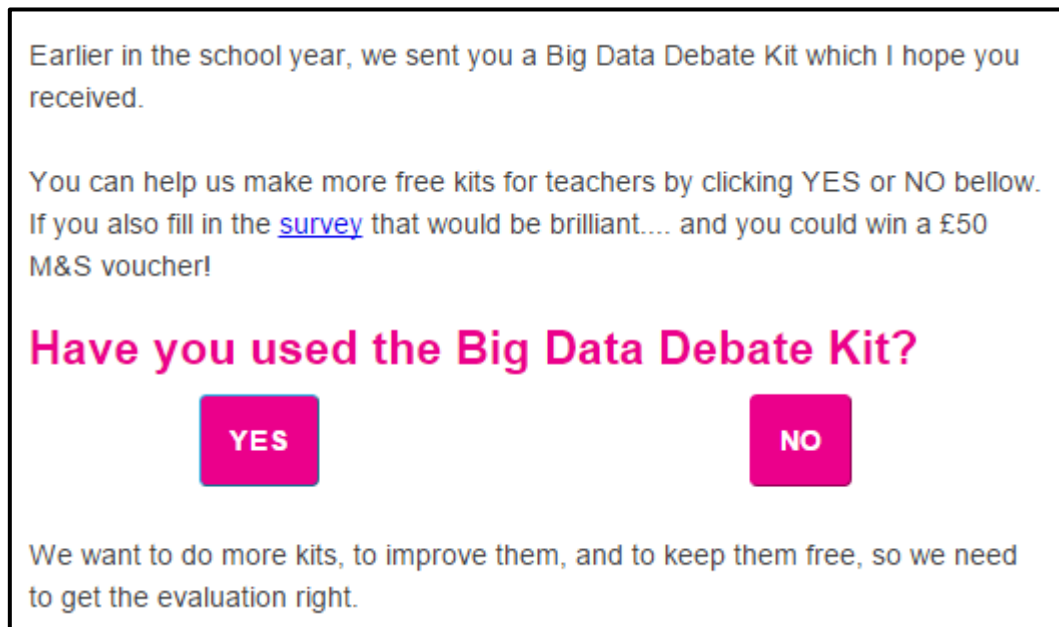
Most (98%) of the teachers said that their students know more about the topic of Big Data, and 38% of them strongly agreed with this and **96% of them confirmed that their students are now aware of how Big Data can be used in Biology and Biomedicine.**

Up to **96% of the teachers stated that using the debate kit allowed their students to develop higher thinking skills around Big Data**, getting to know more about genome sequencing and its applications and being more aware of the issues surrounding the use of Big Data in Biology and Biomedicine. The remaining 4% “didn’t know”.

96% of the teachers said that their students are now aware of how Big Data can be used in Biology and Biomedicine.

Appendix 1: Evaluation methodology

All teachers who had requested a Big Data debate kit were sent the **email** below in June 2015, to ask them if they had used the debate kit. The clicks on the YES and NO links were then tracked and counted.



Teachers who clicked on the NO link were taken to a survey asking them why they hadn't used the Big Data debate kit and inviting them to make any comments or suggestions. Teachers who clicked on the YES link were taken to an online survey about their use and opinion of the Big Data Debate Kit.

The **survey** mainly asked about the usage of the kits; the year group, and if the kits have been used more widely than just one debate with one class. Have the teachers lent the kit to any colleagues? How many times have they used the debate kit? What were the main outcomes of the kit of their students and for them as teachers?



Thank you for letting us know you used the Big Data Debate Kit.

If you have a few more minutes, we'd really appreciate if you could answer this survey. It will help us measure what you and your students gained from the kit, and will help us

make future kits as useful for teachers as possible.

Also, if you fill in the survey you will have the chance of winning £50 M&S voucher!

It will take less than 5 minutes. Don't feel you have to write lots, brief answers are fine.

1. How many times have you used the Big Data Debate Kit?

- 1
- 2
- 3
- 4
- 5+

2. Do you intend to use the Big Data Debate Kit again, in the future?

- Yes
- No
- Haven't decided

3. What year groups of students have you used the Debate Kit with? (Please tick all that apply)

- Year 7 (P7 in Scotland)
- Year 8 (S1 in Scotland)
- Year 9 (S2 in Scotland)
- Year 10 (S3 in Scotland)
- Year 11 (S4 in Scotland)
- Year 12 (S5 in Scotland)
- Year 13 (S6 in Scotland)
- Other (please specify) Please enter an 'other' value for this selection.

4. What subjects has the kit been used to teach? (please tick all that apply)

- Science
- Maths
- General Studies

- Other (tell us what) Please enter an 'other' value for this selection.

5. How many teachers have you lent the Big Data Debate Kit to?

- 0
- 1
- 2
- 3
- 4
- 5-10
- 11+

6. How would you rate the Debate Kit?

6. How would you rate the Debate Kit?	Excellent	Pretty good	OK	Not great	Rubbish
Overall	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Content	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Design & format	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. To what extent do you agree with the following outcomes of using the Big Data Debate Kit?

7. To what extent do you agree with the following outcomes of using the Big Data Debate Kit?	Strongly agree	Agree	Disagree	Strongly disagree	Don't know
My students know more about the topic of Big Data.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My students are now aware of how Big Data can be used in Biology and Biomedicine.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My students know more about genome sequencing and its applications.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. To what extent do you agree with the following outcomes of using the Big Data Debate Kit?	Strongly agree	Agree	Disagree	Strongly disagree	Don't know
My students are more aware of the issues surrounding the use of Big Data in Biology and Biomedicine.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. The main outcomes from using the Debate Kit, for you as a teacher, were... (please tick all that apply)

- It offers a new teaching approach
- It improves team/group work
- It promotes the engagement of all the students
- It introduces certain bioethical issues
- It contains recent and up to date information
- It requires little preparation and planning time
- I am now more confident at running a debate.
- My students are better at seeing all sides of an issue and sharing them with the rest of the group.
- Other (please specify) Please enter an 'other' value for this selection.

9. Do you have any comments on the *content* of the debate kit?

10. Is there anything else you would like to add, such as things you particularly liked or disliked about the Debate Kit, or what you would change about it?

11. Leave your email so we can let you know if you've won a £50 voucher!