University of BRISTOL

Explore Your Universe
Phase 2 Evaluation Report

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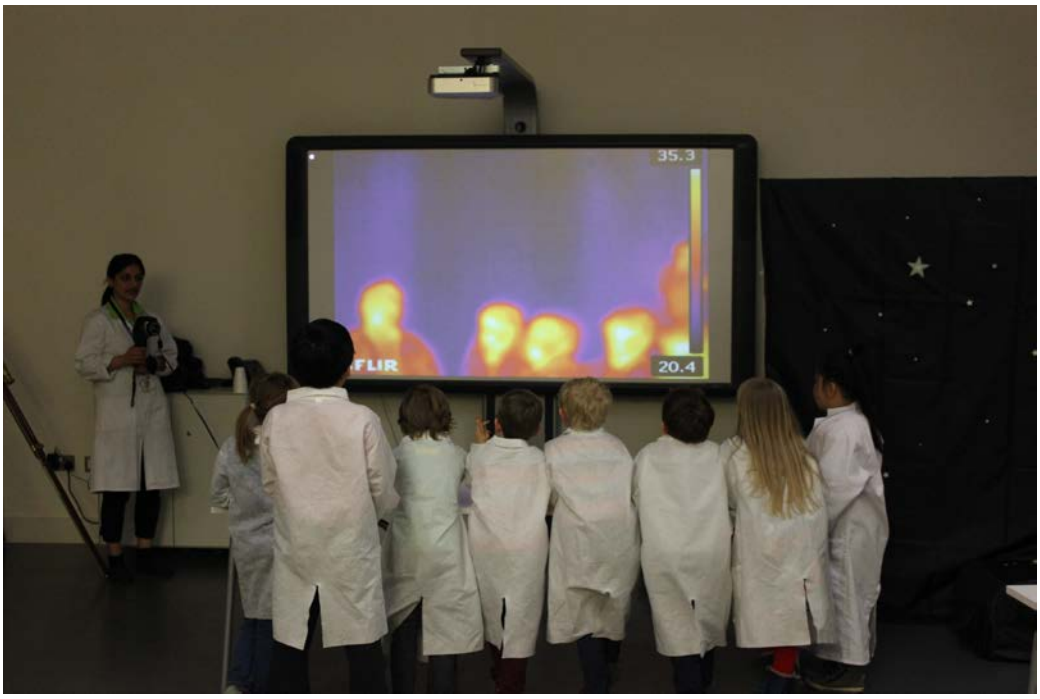

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1. Executive summary

Background

Explore Your Universe (EYU) is a national programme celebrating the physical sciences, developed by The UK Association for Science and Discovery Centres (ASDC) in partnership with the Science and Technology Facilities Council (STFC).

This report presents the findings of Phase 2 of the EYU programme. The vision for Phase 2 was 'to increase the number and breadth of young people who are inspired to explore the physical sciences by expanding, supporting and further developing the highly successful 'Explore Your Universe' national strategic programme. This will be achieved by providing multiple and wide-ranging opportunities for further training and development of the existing and the expanded network.'

EYU set out to collect a robust, national, multi-centre dataset to demonstrate its impact on participating families and students and to help inform future programme delivery. Phase 1 took place from 2012-2014 and Phase 2 from 2014-16. Phase 2 was informed by lessons from Phase 1 and was progressed through a package of support for participating venues. The venues in Phase 2 were different to those who took part in Phase 1.

EYU Phase 1 engaged 156,880 people, reaching over 75,000 girls and women. EYU Phase 2 aimed to build on this success. During Phase 2, 10 new delivery partners delivered to 77,133 people, and the Phase 1 partners continued to deliver to 107,691 people reaching a total audience of 184,824 families and school children across the UK.

Evaluation of Phase 1 adopted a qualitative approach to explore the scope of outcomes reached and to identify key lessons to inform delivery in Phase 2. The evaluation objectives for Phase 2 required a more quantitative approach. These and other differences in the delivery models make it difficult to draw comparisons between Phase 1 and 2.

People participating in Explore Your Universe events in Phase 2

The numbers of participants and the number of evaluation responses that the analysis is based on are shown in the tables below. Numbers were recorded by the venues taking part.

Table 2-1 Number of participants recorded from overall metric measures

By event type	Number of days	Number of attendees	Average per day
School Masterclasses	62	2,134	34
Workshops	141	10,717	76
Family shows	89	20,445	230
Meet the experts	78	24,648	316
Brownies, Guides	21	745	35
Drop in demos	26	3,630	140
Other audiences	22	13,584	617
TOTAL	439	75,903	

Headline findings[1]

- **75,903** people attended an EYU event run by Phase 2 delivery partners (a further **1,230** attended workshops run by University of Warwick and **107,691** attended events that continue to be run by Phase 1 delivery partners. Metrics and evaluations for these engagements were not available).
- **79% participants were more interested ('a lot'/'a little') in science after attending an Explore Your Universe event.**
- **62% of both workshop and masterclass students said they were more interested in a career in science after attending the events.**
- 84% said they would recommend the event to others.

- **Gender: on average, there was a greater impact on girls attending the workshops and masterclasses,** with a greater proportion of girls than boys reporting an increased interest in studying and/or a career in science as a result of the events. For example,

    - **interest in continuing to study science** before the masterclasses was 65% in both boys and girls; after the masterclass, 66% of boys and 75% of girls indicated that they were more interested in studying science.
    - **interest in a career in science** before the masterclass was 47% and 45% for boys and girls respectively; after the masterclass 48% of boys and 68% of girls were more interested in a career in science.

- **Age:** on average, the impact of the workshops and masterclasses appeared to be higher amongst the younger age groups, for example the proportion of children stating that they were more interested in science as result of the student workshops ('a lot'/'a bit') ranged from 88% amongst 8 year olds to 42% for those aged 15; 78% of 8 year olds were more interested in a career in science after the student workshop compared to 32% amongst those aged 15.

- **Thematic outcomes:** The Phase 2 events resulted in very similar qualitative outcome themes as those identified in Phase 1. EYU outputs and outcomes that align to the STFC generic learning outcomes framework were used to show that EYU supports delivery of STFC outcomes.

- **Differences between Phase1 and Phase 2:**
    - **The proportion of participants in Phase 2 who said they would be more interested in a career in science as a result of attending a workshop or a masterclass was higher compared to Phase 1** (Proportions rising from 41% in Phase 1 to 61% in Phase 2 for workshop participants, and 37% in Phase 1 to 71% in Phase 2 for masterclass participants.)
    - **The proportion of participants in Phase 2 who said that they would be more interested in studying science as a result of attending a workshop or a masterclass was higher compared to Phase 1** (Proportions rising from 56% in Phase 1 to 79% in Phase 2 for the student workshop, and 43% in Phase 1 to 58% in Phase 2 for the masterclass.)
    - It is difficult to interpret these differences as there were many differences between Phases, including the venues, delivery models and evaluation; however, it is also notable that the lessons learnt during Phase 1 were used to improve the quality of delivery in Phase 2.

Family sessions (N=87)

- **86% of children said they were more interested in science after participating in a family session (78% of boys and 95% of girls.)**

[1] Please note that all percentages quoted relate to the sample surveyed at each event

- In many cases, the sessions built on an existing interest in science.

Meet the expert sessions (N=94 adults, 104 children)

- **86% indicated that they were more interested in science ('a lot / a bit') after a meet the expert session.**
- The equipment used proved to be popular particularly the infrared camera, as evidenced by the verbatim comments.

Student Workshops (N=1,406 pre session, 1,341 post session)

- **79% stated that their interest in studying science had increased as a result of the workshop. This was slightly higher among girls than boys (80% and 77% respectively).**
- 29% of boys and 29% of girls said they were interested in a career in science ('definitely/possibly') before attending the workshop. **Following the workshop, 61% were 'a lot more / more interested' in a career in science, 58% among boys and 63% among girls.**
- 68% used equipment they had not used before.
- 83% said they would recommend the workshop to others.
- 97% of teachers would recommend the workshops to other teachers and agreed that it was value for money
- 97% of participants were from state schools in the UK.
- Based on postcodes, the sample of schools attending events was broadly representative of the population in terms of levels of deprivation[2]
    - 23% of schools from England were in the most deprived category (and 24% in the least deprived category.)
    - 37% of schools from Scotland[2] were in the most deprived category (16% in least deprived)
    - 7% of the schools from Wales[2] were in the most deprived category (61% in least deprived).

Student Masterclasses (N=130 pre, 160 post)

- 65% of students about to attend a masterclass event said that they intended to continue to study science. **After the masterclass, 71% of students said they were more interested in studying science as a result of the event, with a higher percentage being reported by girls than boys (75% among girls and 66% among boys.)**
- 45% were interested in a career in science before the event (47% of boys and 43% of girls.) **After the masterclass, 58% of students said they were more interested in a career in science, with a marked difference by gender (66% among girls and 48% among boys.)**
- 82% said they would recommend the masterclass to others. This was particularly so for girls, 86% of whom would recommend it compared to 76% of boys.
- 70% of girls and 62% of boys felt that the masterclass would help with science classes at school. Younger participants were more likely to feel that the masterclass would help, particularly those aged 12-13 (73% agreed that the event would help.)
- 27% of teachers were aware of STFC prior to attending the masterclass.
- 74% of teachers gave an overall rating of very good. The highest rating was given for the knowledge of the staff running the sessions (88%). All teachers would recommend it to other teachers.
- All the teachers who provided a rating agreed that the sessions were value for money.
- The sample size for schools attending masterclasses at science centres was small for England and Scotland. Of the 17 schools from Wales attending a masterclass event at a science centre, 8 schools (29%) were in the least deprived category and 2 schools (7%) were in the most deprived category. Of the schools attending a university masterclass,

[2] Undertaken for 91 schools in England, 38 in Scotland and 28 in Wales

2 out of 17 schools (12%) from England were from the least deprived category while 3 schools (18%) were from the most deprived category.

2. Background & method

2.1. Introduction and background

Explore Your Universe (EYU) is a national programme celebrating the physical sciences developed by The UK Association for Science and Discovery Centres (ASDC) in partnership with the Science and Technology Facilities Council (STFC).

This report presents the findings of Phase 2 of the EYU programme. The vision for Phase 2 was 'to increase the number and breadth of young people who are inspired to explore the physical sciences by expanding, supporting and further developing the highly successful 'Explore Your Universe' national strategic programme. This will be achieved by providing multiple and wide-ranging opportunities for further training and development of the existing and the expanded network.'

EYU set out to collect a robust, national, multi-centre dataset to demonstrate the impact of the programme on participating families and students and to help inform future programme delivery.

Evaluation for **Phase 1 (2013-14) (King, Dillon, Dawson & Osborne, 2014)** was devised by the Science and Technology Education Group at King's College London, led by Professor Justin Dillon. Evaluation of Phase 1 focused on gathering rich qualitative insight on the impact of the interventions.

An extended delivery in **Phase 2 was progressed during 2014-16**, to increase the number and breadth of young people who were inspired to explore the physical sciences, by expanding and further developing the programme.

Phase 2 aimed to support ongoing delivery, innovation and networking among the Science and Discovery Centres that had participated in Phase 1 and to test the impact of a more limited level of support for a new set of venues recruited for Phase 2, including both Science and Discovery Centres and some Universities.

This report presents the findings of evaluation from the new venues recruited for Phase 2. (Data on supporting extended activity amongst Phase 1 centres over the Phase 2 period is not covered by this report.)

Aims of the evaluation of Phase 2

Evaluation of Phase 2 was also led by Professor Justin Dillon. The evaluation objectives for Phase 2 required a more quantitative approach on order to generate metrics and where possible to allow comparisons to be drawn between the approaches taken in Phase 1 and 2.

Specific evaluation objectives for Phase 2 included the requirement to look for evidence of any differential impact related to age (with focus on younger children age 7-10), gender or levels of deprivation.

2.2. Phase 2 evaluation tools

The evaluation approach and methodologies used for Phase 2 were very similar to those used for Phase 1 (King, Dillon, Dawson & Osborne, 2014) with standardised evaluation forms and protocols used across venues.

Evaluation design was developed during Phase 1 by the team at King's as a contextually grounded multi-site, multi-event case (Stake, 1994) following a mixed/multiple methods approach, commonly used to provide investigative depth and analytic validity by exploring issues from more than one perspective (Tashakkori & Teddlie, 2003). Data collection instruments were also designed by the research team at King's.

All the data collection at Phase 2 was administered by the science centres, so it is not possible to determine how representative the samples achieved were of the larger cohorts they were sampled from, or any degree of research bias introduced. It is well established in the science communication and museum literatures that audiences for informal science education are typically self-selecting and have pre-existing positive attitudes towards such events (Hornig Priest, 2009; Packer, 2008; Rennie & Williams, 2006; Wellcome Trust, 2008; Wilkinson, Dawson, & Bultitude, 2011). Thus, an expectation of the research team going into the analysis was that participants would respond positively about their experience.

Data collection took part over 2014-15. Evaluation forms can be found in an appendix at the end of the report.

Table 2-1 Overview of data collection tools

A	Evaluation form for 14-16 year old **Students** attending a **Masterclass**	Two-page evaluation form, administered by science centre, pre- and post-masterclass
B	Evaluation form for primary and secondary **Students** attending a **School Workshop**	Two-page evaluation form, administered by science centre, pre and post workshop
C	Evaluation form for **Teachers** of 14-16 year olds in **Student Masterclass**	Two-page evaluation form, administered by science centre
E	Survey form for **Families** taking part in a **Family Workshop**	Two-page evaluation form, administered by science centre
F	Survey form for **Families** attending a **Meet the Expert session**	Two-page evaluation form, administered by science centre

Responses from the evaluation forms were submitted electronically and SPSS files collated by King's College London.

2.3. Phase 2 data analysis

Data analysis was carried out by a team led by Professor Dillon at the Graduate School of Education at the University of Bristol University, supported by TNS.

A qualitative approach to the analysis was adopted for Phase 1 to explore the extent of outcomes reached by identifying key themes and lessons learnt in order to inform future practice. The evaluation objectives for Phase 2 required a more quantitative approach in order to generate metrics and where possible to allow comparisons to be drawn between the approaches taken in Phase 1 and 2 and quantification of the data collected on participant profiles (age, gender, etc.) and also responses to questions about the event types.

There were three approaches to the analysis of the Phase 2 data:

- Analysis of the overall measures recorded for each event included as part of the programme and collected by venue.

- Analysis of the quantitative data collected through evaluation questions for each of the event types.
- Analysis of the verbatim comments recorded in open ended questions for each event type to identify common themes (presented as a word clouds), with accompanying examples of quotes collected. Phase 2 analysis also looked for evidence that the themes that emerged from Phase 1 were apparent in Phase 2.

Using data recorded in Word documents and SPSS files, the analysis was undertaken in Excel. The data was analysed by gender, age and where possible, levels of deprivation[3]. Due to small sample sizes in some cases, the data has not been presented for the individual venues included in the programme.

The data collection resulted in 7 distinct data sets. Data were anonymised where appropriate at the point of report writing. Where data was supplied for more than one adult or child in a party, analysis has been based on a single representative adult and child from that party.

Phase 2 analysis also looked to explore whether there was evidence that the programme supported delivery of the outcomes set out in STFC's Generic Learning Outcomes framework.

Due to the small sample sizes for some of the events and the time available for analysis, the differences shown in this report have not been tested for statistical significance. However, the approach adopted in the analysis of the data is robust and does provide evidence of the outcomes of the programme.

2.5 Scale of evaluation

The numbers of participants at each event and the number of evaluations that the analysis is based on are shown in the tables below.

Table 2-2 Number of participants recorded for overall measures

By event type	Number of events	Number of attendees	Average per event
School Masterclasses	62	2,134	34
Workshops	141	10,717	76
Family shows	89	20,445	220
Meet the experts	78	24,648	316
Brownies, Guides	21	745	35
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Other audiences	22	13,584	617
TOTAL	439	75,903	

[3] See http://tools.npeu.ox.ac.uk/imd/ for the tool used and https://data.gov.uk/dataset/index-of-multiple-deprivation for a description of this classification

Table 2-3 Completed evaluations Phase 2 event analysis based on *(note not all respondents answered each question)*

	Adults	Children
Family events:		
Family session	84	87
Meet the expert	94	102
School events		
Pre masterclass	n/a	130
Post masterclass	n/a	160
Pre workshop	n/a	1447
Post workshop	n/a	1268
Teacher evaluation of student masterclass	54	n/a
Teacher evaluation of student workshop	87	n/a

3. Findings

3.1. Evidence of delivery of STFC generic learning outcomes

The Science and Technology Facilities Council (STFC) outlined a set of specific General Learning Outcomes (GLOs) for the EYU programme. These were:

Participants will…	Do	Feel	Value	Have skills to	Understand
These are the top-level outcomes for the STFC PE programme	Explore our science and technology further for themselves Share their understanding of our science & technology with learners, peers, family and their community Consider choosing, or encouraging others, to study & pursue careers in science & technology	Welcome Confident Inspired Involved Satisfied	Science & technology for its economic, social & cultural contribution of to society Employment in science & technology at all levels The sharing of their understanding & skills with others	Carry out scientific or technical activities themselves Participate in informed discussion about science & technology Share their skills, understanding & values with others	We study the universe on the very large and the very small scale This involves work in the areas of: • Big Telescopes • Our Material World • Inside the Atom • Big Data & Computing • The marriage of scientific method & large facilities • Finding tangible benefits for society

Several measures included in the analysis can be used as proxies to evaluate these outcomes:

What participants did:

- In total, 75,903 attended one of the Phase 2 delivery partner EYU events.
- 84% of those asked stated that they would recommend the event attended (workshop and masterclass evaluations from both students and teachers).

What participants felt:

- 79% indicated that they were **more interested in science** (a lot/ a little) after attending an event (masterclass, workshop, family session, meet the expert).
- In the verbatim comments for these events, participants recorded finding the sessions interesting and fun, while teacher comments included that there were activities to inspire their students.

Values:

- 71% of participants at the masterclass indicated that they were more interested in **studying science** after attending the event.
- 62% of participants indicated that they were more interested in a **career in science** after attending a workshop or a masterclass.

Skills:

- At least a third of participants at the masterclass and the workshop **used equipment that they had not used before** (65% and 32% respectively).
- When asked about aspects of the event that they did not normally have in school, the equipment used was the most commonly mentioned amongst both teachers and students.

Understand:

- **Recall of facts** was common across the events recalled after the events (see section 4), which indicates s a positive effect on understanding following participation.

Comparison with the thematic analysis from Phase 1 evaluation

The qualitative evaluation for Phase 1 highlighted some common themes emerging from across the event types (see King, Dillon, Dawson & Osborne, 2014)

- The equipment used is not normally available to schools and is valued highly. Frequently mentioned equipment included the infrared camera, plasma ball, Van de Graaff generator, dry ice and liquid nitrogen
- Hands-on experiences were valued and enjoyed
- Students seemed more receptive to hearing about real research and real-world applications; teachers also said this was invaluable.
- Evaluation from both students and teachers suggested that the activities have the potential to support both core learning and revision experiences, often being evidenced by recall of specific facts.
- Generation of interest in studying science and careers in science was also evident.

Results for Phase 2 given in the sections below suggest that there was considerable coherence with these themes.

4. Results by event type

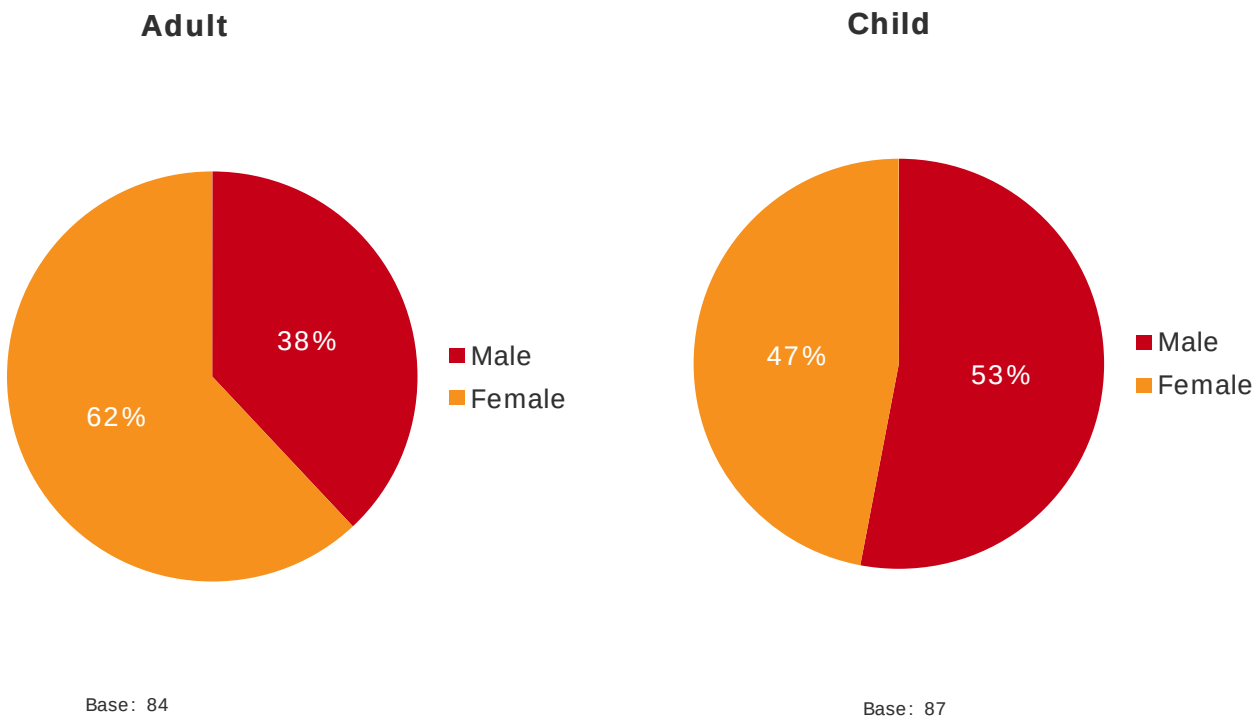
4.1. Family session

4.1.1. Attendee numbers, age and gender

19,552 participants were recorded at the 89 family session days run as part of the programme, an average of 220 per day in multiple shows.

Data analysed from the event evaluation forms indicated that around 6 in 10 adults attending family sessions were female, while just over a third (39% of all adults) indicated that they worked in a science related occupation. There was a more even gender split amongst the children attending with 53% males and 47% females recorded (see Figure 4-1 below).

Figure 4-1 Gender – adult; child (family sessions)

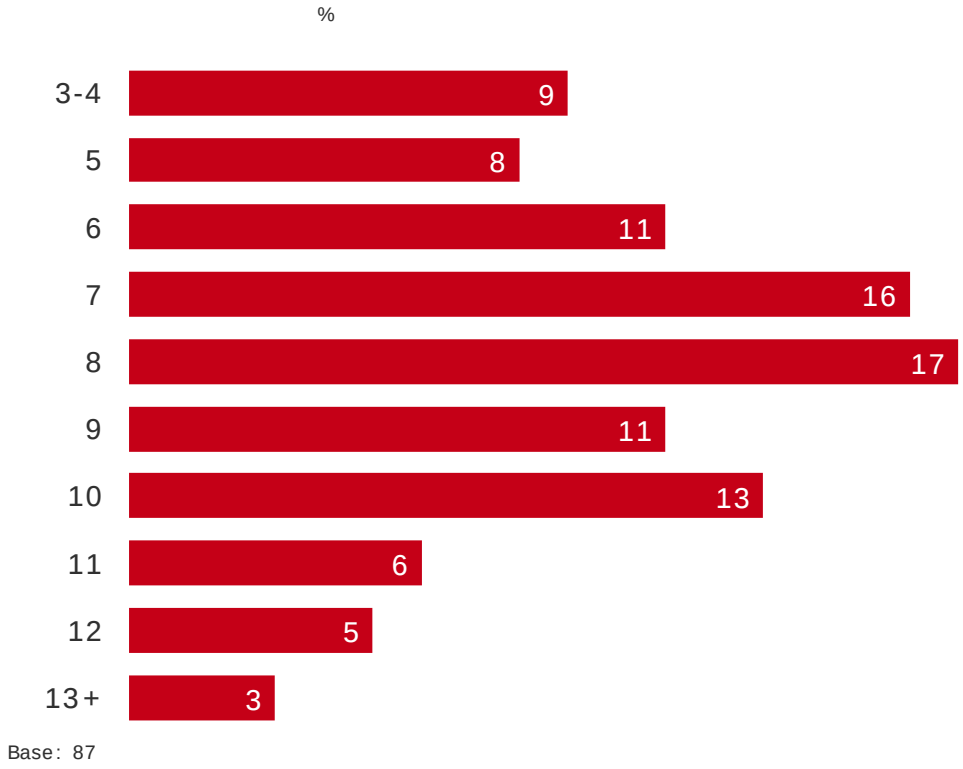


Base: 84

Base: 87

As shown in Figure 4-2 overleaf, 69% of the children attending a family session were between the ages of 6 and 10, while 17% were aged 5 or under and 14% were 11 or older.

Figure 4-2 Age of children attending (family session)



4.1.2 Interest in science as a result of the event

Children attending the family events were asked whether they were more or less interested in science as a result of participation in the session. As shown in Table 4-1 below, 86% of all children indicated that the session had increased their interest in science to some extent – 57% 'a lot' and 29% 'a bit.' None of those interviewed indicated that it had negatively affected their interest in science.

Table 4-1 Whether session made children more interested in science (family session)

	Male (N=41)	Female (N=38)
More interested (NET)	**78%**	**95%**
A lot more interested in science	44%	71%
A bit more interested in science	34%	24%
Neither more nor less interested in science	22%	5%
Less interested (NET)	**0%**	**0%**
Less interested in science	0%	0%
A lot less interested in science	0%	0%

When analysed by gender, interest was higher following the session amongst females, with 95% stating that it had positively affected their interest in some way - 71% 'a lot' and 24% 'a bit'. The majority of males also agreed that their interest had increased, however, this group were

more likely to state that they were 'neither more nor less interested in science' following their visit (22%).

Fig 4-3 presents the key words that emerged from the open ended questions to explore why the session had an impact.

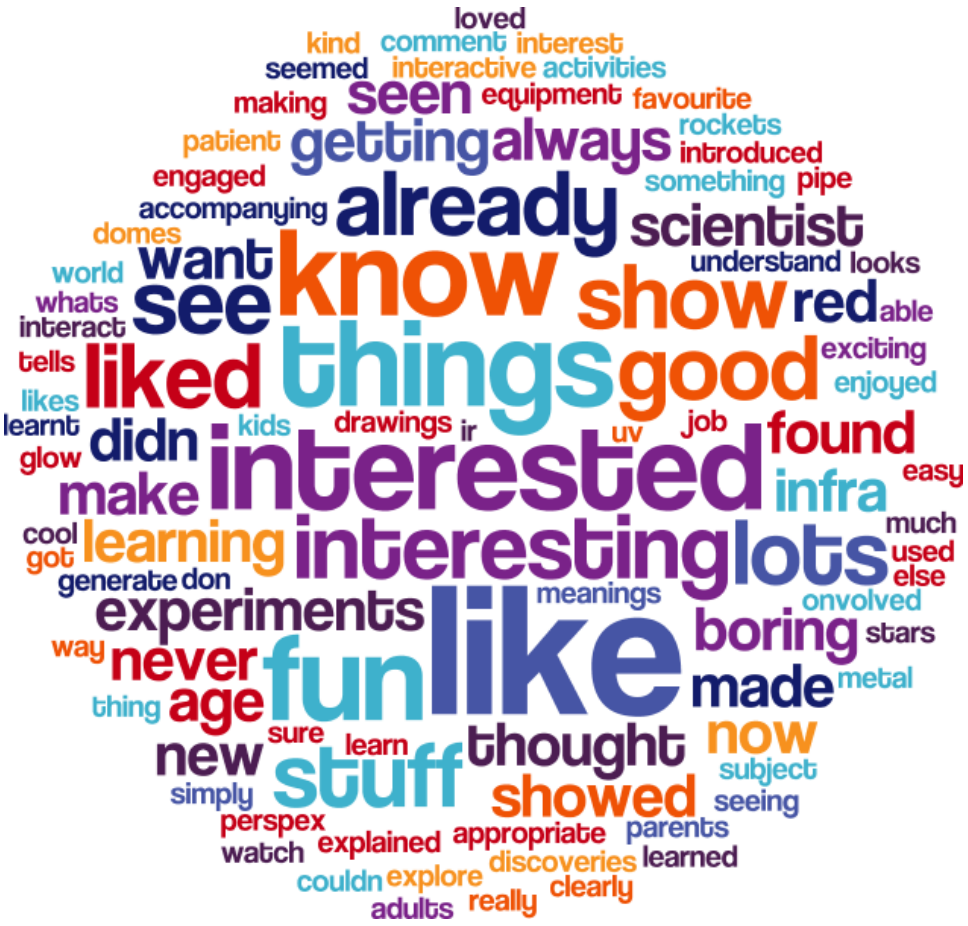
Amongst those who stated that they were more interested in science, an existing interest in science that had been built on by the session was a common theme:

"Already interested but thought lots more about science because of the activities."

"Because I learned more. Kind of like science already."

"Science is my favourite subject."

Figure 4-3 Reasons given for why they were more interested in science (amongst those stating they were 'a lot/ a bit' more interested)



Key findings summary – family sessions

- 86% of children said they were more interested in science after attending a family session.
- In many cases, the sessions built on an existing interest in science.

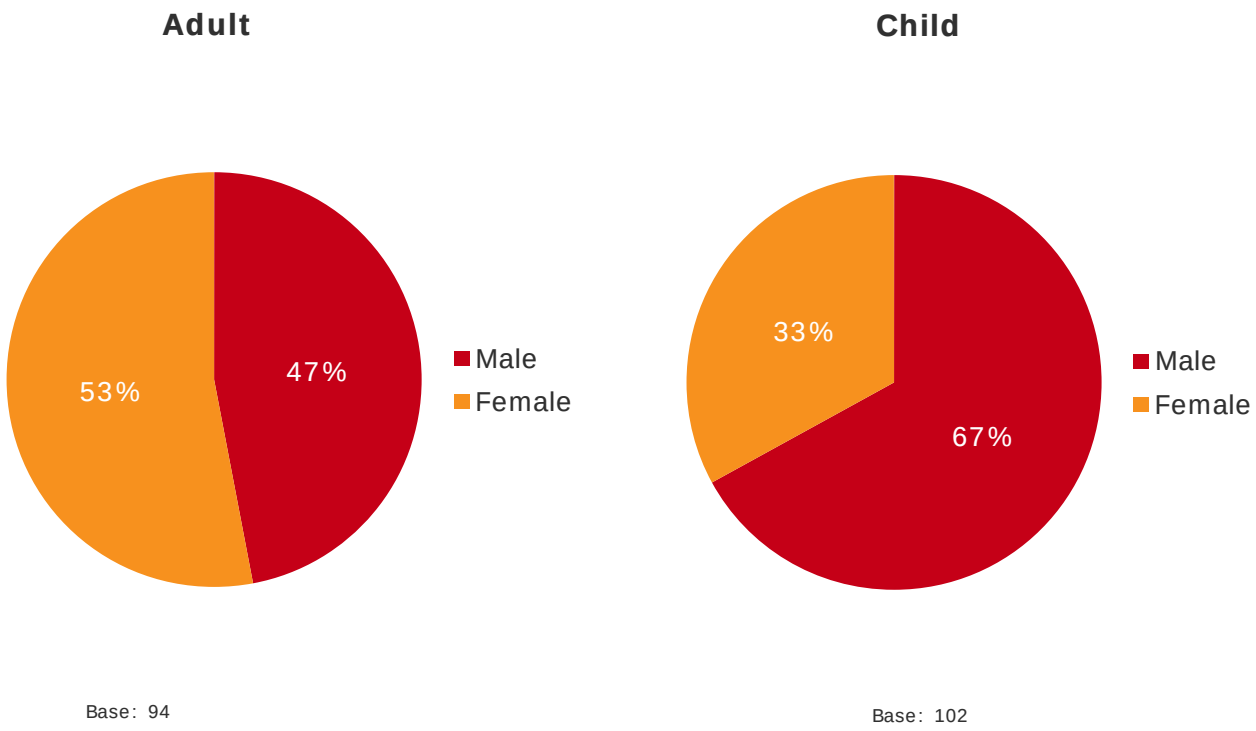
4.2. Meet the expert (for children and adults)

4.2.1 Attendee number, age and gender

24,648 participants were recorded at the 78 meet the expert days run as part of the programme, an average of 316 per day.

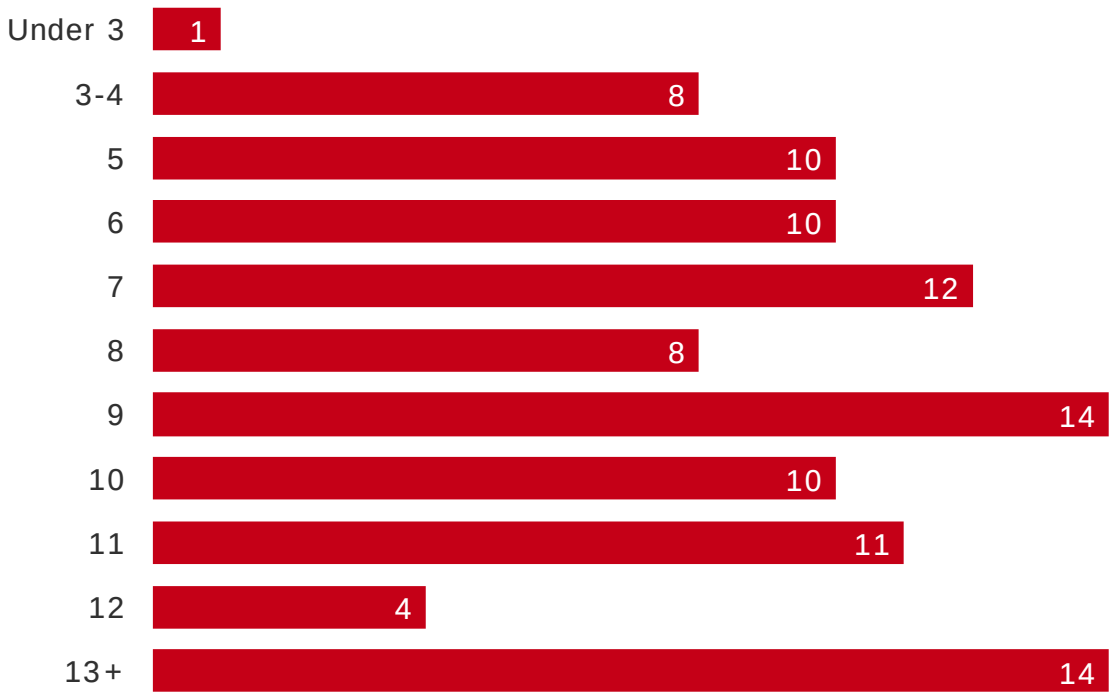
Data analysed from the evaluation forms indicated that there was a fairly even gender split amongst the adults attending (see Figure 4-4), with 47% male and 53% female, while 37% of all adults attending worked in a science related occupation. Around two-thirds of the children attending were male (67% compared to 33% female)

Figure 4-4 Gender – adult; child (meet the expert sessions)



As shown in Figure 4-5 overleaf, there was no clear pattern with regards to the age of participants. Around a third were between the ages of 5 and 7 (31%) while a similar proportion were between 9 and 11 (35%).

Figure 4-5 Age of children attending (meet the expert sessions)



4.2.2. Interest in science as a result of the meet the expert event

Children attending these events were also asked about the impact the event had on their interest in science. As shown in Table 4-2 below, 86% indicated that the session made them more interested in science to some degree, 38% 'a lot' and 48% 'a bit' more interested.

Table 4-2 Whether event made children more interested in science (meet the expert sessions)

	Male (N=67)	Female (N=33)
More interested (NET)	**84%**	**91%**
A lot more interested in science	39%	36%
A bit more interested in science	45%	55%
Neither more nor less interested in science	16%	6%
Less interested (NET)	**0%**	**3%**
Less interested in science	0%	0%
A lot less interested in science	0%	3%

When split by gender, a higher proportion of females than males indicated that the session had made them more interested in science (91% compared to 84%).

As shown in Figure 4-5 below, when asked what they had found most interesting, answers commonly related to the equipment used, most notably the infrared camera. Feedback included:

"Thermal Camera - Liked the 'spy' game we played with it."

"We liked the thermal imaging camera because "you can see everything."

"All of it! Because never heard of this, like new things, it was all really interesting."

Figure 4-6 Word cloud – what participants found most interesting about the session (meet the expert sessions)

Key findings summary – meet the expert sessions

- 86% indicated that they were more interested in science ('a lot/ a bit') after a meet the expert session.
- The equipment used proved to be popular, as evidenced by the verbatim comments, particularly the infrared camera.

4.3. Student Workshop (age 10-13 years) – pre and post

Data was collected both before and after the student workshops that were part of the EYU programme. While not all of the questions used before and after were the same, the results do give an indication of the impact of the sessions on participants.

It should also be noted that the sample completing the questionnaires before and after the session were not necessarily the same people and it was not possible to track the responses of individuals before and after the event.

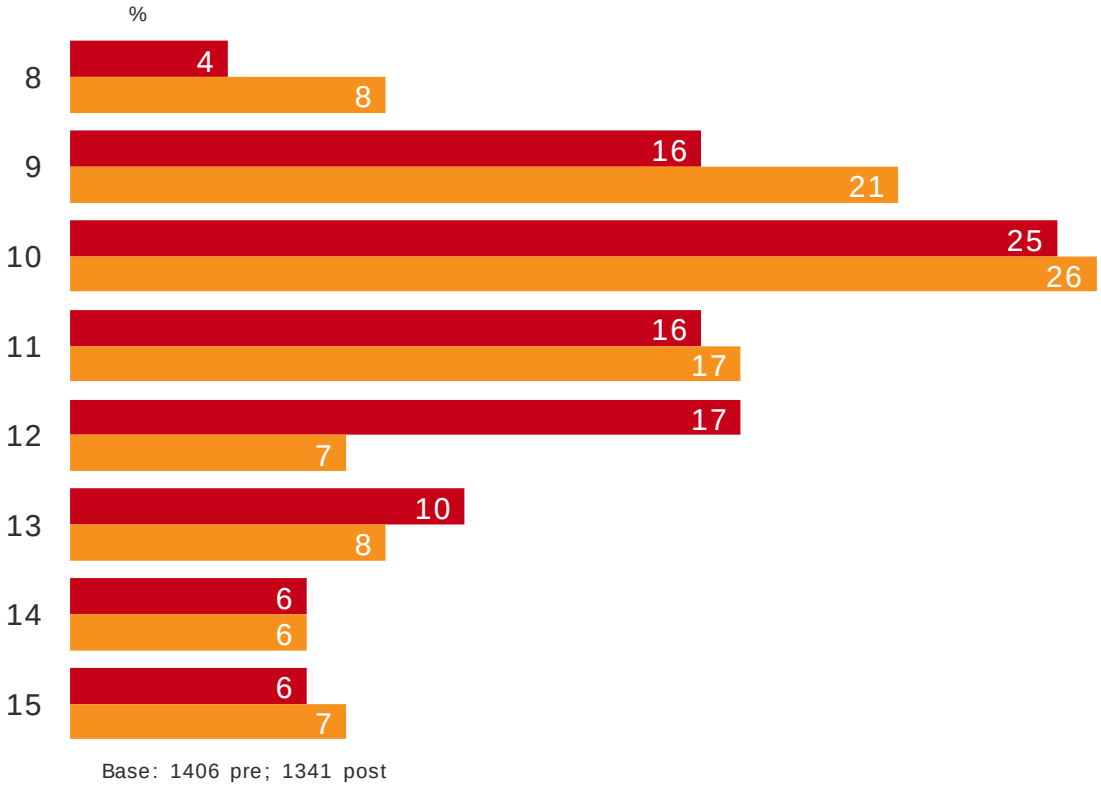
4.3.1. Attendee number, age and gender

1,447 attendees completed a questionnaire prior to attending a workshop and a similar number (1,268) provided feedback after the session. In total, 10,717 students attended a workshop run as part of the programme.

97% of attendees were from state schools in the UK. There was reasonable spread across the categories of deprivation[4], with around a quarter (24%) in the least deprived category and 23% in the most deprived category. (These proportions are broadly in line with the averages for England where around a fifth of the population are in the least deprived group and the same in the most deprived.)

There was a broadly even gender split amongst respondents for both the pre and post workshop. There was a slightly younger age profile in respondents for the post wave analysis, however, for both surveys, around 7 in 10 respondents were between the ages of 9 and 12 (see Figure 4-7 below).

Figure 4-7 Age of respondent sample – pre and post workshop



Base: 1406 pre; 1341 post

[4] Undertaken for schools in England only

4.3.2. Pre student workshop

General Interest in science

When asked about their interest in science prior to attending the workshop, there was a high level of interest and an even split by gender. Amongst both males and females, just under three-quarters indicated that they 'really' or 'quite' liked science.

Table 4-3 General interest in science by gender – pre workshop

	GENDER	
	Male (N=716)	Female (N=731)
Any like (NET)	**73%**	**73%**
I really like science	32%	35%
I quite like science	41%	38%
I have no strong views. I neither like, nor dislike, science	19%	20%
Any dislike (NET)	**8%**	**8%**
I don't like science	4%	5%
I really don't like science	4%	3%

There was a greater variation in the levels of interest in science when analysed by age. While interest was generally good across the age groups, it was highest amongst the youngest and oldest categories – 95% of 8 year olds and 84% of 15 year olds stated that they had any interest.

Table 4-4 General interest in science by age – pre workshop

	AGE							
	8 (N=57)	9 (N=222)	10 (N=351)	11 (N=223)	12 (N=233)	13 (N=144)	14 (N=81)	15 (N=87)
Any like (NET)	**95%**	**75%**	**71%**	**70%**	**68%**	**69%**	**62%**	**84%**
I really like science	47%	44%	33%	30%	26%	28%	17%	38%
I quite like science	47%	31%	38%	40%	42%	42%	44%	46%
I have no strong views. I neither like, nor dislike, science	5%	11%	22%	22%	23%	26%	27%	13%
Any dislike (NET)	**0%**	**14%**	**7%**	**7%**	**9%**	**5%**	**11%**	**3%**
I don't like science	0%	7%	4%	7%	5%	4%	7%	2%
I really don't like science	0%	7%	3%	0%	4%	1%	4%	1%

Interest in a career in science

While interest in science was relatively high amongst those interviewed prior to the workshop, lower proportions indicated an interest in a career in science. Across both genders, around a third indicated that they 'definitely/ may' want a career in science, compared to 37% who were not sure and 34% who did not want such a career.

Table 4-5 Interest in a career in science by gender – pre workshop

	GENDER	
	Male (N=714)	Female (N=731)
Definitely/ may want a career (NET)	**29%**	**29%**
Yes, I definitely want a career in science	12%	12%
Yes, I possibly want a career in science	17%	17%
I'm not sure	37%	37%
Don't want a career (NET)	**34%**	**34%**
No, I don't want a career in science	19%	18%
No, I definitely don't want a career in science	15%	16%

By age, the greatest interest in science as a career was highest amongst the youngest and oldest age groups, with 40% of 8-year-olds and 43% of 15-year-olds indicating that they 'definitely/ may' want a career in science. The group with the largest proportion unsure about whether they wanted a career in science was those aged 12 (47%).

Table 4-6 Interest in a career in science by age – pre workshop

	AGE							
	8 (N=57)	9 (N=222)	10 (N=351)	11 (N=222)	12 (N=233)	13 (N=143)	14 (N=81)	15 (N=87)
Definitely/ may want a career (NET)	**40%**	**31%**	**24%**	**26%**	**23%**	**25%**	**30%**	**43%**
Yes, I definitely want a career in science	26%	16%	10%	9%	6%	10%	11%	13%
Yes, I possibly want a career in science	14%	15%	14%	16%	17%	15%	19%	30%
I'm not sure	33%	28%	37%	39%	47%	40%	42%	38%
Don't want a career (NET)	**26%**	**41%**	**39%**	**36%**	**30%**	**35%**	**28%**	**20%**
No, I don't want a career in science	18%	17%	19%	19%	17%	26%	23%	15%
No, I definitely don't want a career in science	9%	24%	21%	16%	14%	9%	5%	5%

4.3.3. Post student workshop

Interest in studying science

The post workshop evaluations included a question on the effect that attending the workshop had on interest in studying science. It is encouraging to note that around four-fifths of respondents indicated that their interest had increased (79%), slightly more so amongst females (80%) than males (77%) but not greatly so. Around 4 in 10 indicated that they were now 'a lot' more interested (40% males, 44% females).

Table 4-7 Interest in studying science by gender – post workshop

	GENDER	
	Male (N=644)	Female (N=624)
More interested (NET)	**77%**	**80%**
A lot more interested in studying science	40%	44%
A bit more interested in studying science	37%	36%
Neither more nor less interested in studying science	19%	17%
Less interested (NET)	**3%**	**3%**
Less interested in studying science	1%	1%
A lot less interested in studying science	2%	2%

When analysed by age, increased interest in studying science was greatest amongst the younger age groups. The proportion stating that they were more interested ('a lot'/'a bit') ranged from 88% amongst 8 year olds to 42% for those aged 15.

Table 4-8 Interest in studying science by age – post workshop

	AGE							
	8 (N=94)	9 (N=253)	10 (N=314)	11 (N=205)	12 (N=80)	13 (N=99)	14 (N=69)	15 (N=91)
More interested (NET)	**88%**	**89%**	**86%**	**80%**	**78%**	**79%**	**68%**	**42%**
A lot more interested in studying science	63%	61%	52%	38%	23%	28%	19%	10%
A bit more interested in studying science	26%	27%	34%	42%	55%	51%	49%	32%
Neither more nor less interested in studying science	10%	9%	11%	16%	20%	19%	29%	57%
Less interested (NET)	**2%**	**2%**	**4%**	**4%**	**3%**	**2%**	**3%**	**1%**
Less interested in studying science	1%	1%	1%	2%	3%	1%	1%	1%
A lot less interested in studying science	1%	2%	3%	2%	0%	1%	1%	0%

Interest in a career in science

Over half of workshop participants indicated that they were more interested in a career in science after the workshop (61% overall). This was slightly higher amongst females (63% 'a lot'/'a bit' more interested) than males (58%). Very small proportions indicated a decrease in interest and around 3 in 10 (34% males, 29% females) stated that they had 'no particular view' on whether they wanted a career in science.

Table 4-9 Interest in a career in science by gender – post workshop

	GENDER	
	Male (N=641)	Female (N=617)
More interested (NET)	**58%**	**63%**
I am now a lot more interested in a career in science	27%	26%
I am now a bit more interested in a career in science	31%	37%
No particular view	34%	29%
Less interested (NET)	**8%**	**8%**
I am now less interested in a career in science	2%	3%
I am now not at all interested in a career in science	6%	5%

Once again, there was a clear pattern by age. 78% of 8 year olds were more interested in a career in science after the workshop, this compares to 32% amongst those aged 15.

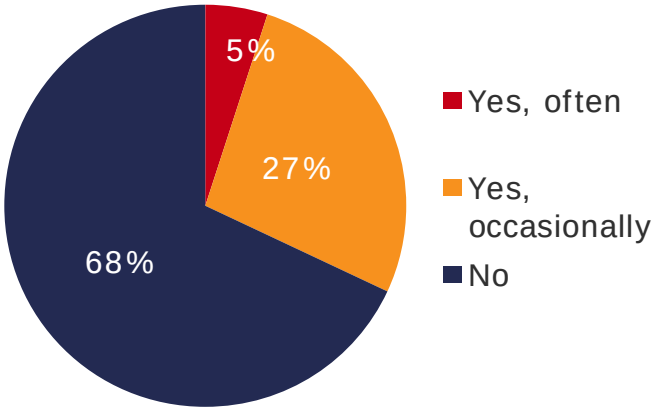
Table 4-10 Interest in a career in science by age – post workshop

	AGE							
	8 (N=92)	9 (N=249)	10 (N=312)	11 (N=205)	12 (N=80)	13 (N=95)	14 (N=69)	15 (N=91)
More interested (NET)	**78%**	**69%**	**68%**	**58%**	**58%**	**56%**	**51%**	**32%**
I am now a lot more interested in a career in science	48%	40%	32%	20%	16%	17%	13%	8%
I am now a bit more interested in a career in science	30%	30%	36%	38%	41%	39%	38%	24%
No particular view	9%	21%	24%	32%	41%	39%	46%	64%
Less interested (NET)	**13%**	**10%**	**8%**	**11%**	**1%**	**5%**	**3%**	**4%**
I am now less interested in a career in science	3%	4%	3%	3%	0%	2%	0%	2%
I am now not at all interested in a career in science	10%	5%	6%	7%	1%	3%	3%	2%

Use of equipment

The workshop introduced a high proportion of participants to equipment that they had not used before. Just over two-thirds of those interviewed after the workshop stated that they had never used the equipment demonstrated before (68%), while around a quarter used it occasionally (27%) and 5% often.

Figure 4-8 Whether used equipment before – post workshop



Base: 1324

Most memorable

As shown in Figure 4-9, when asked what things they would remember the most, the equipment used was amongst the top answers, particularly the infrared camera and telescopes. The information on light provided during the workshop was also likely to be recalled as the quotes below demonstrate:

"When you put your hand under glass and get the infra-red camera to shine over it, it doesn't detect any heat!"

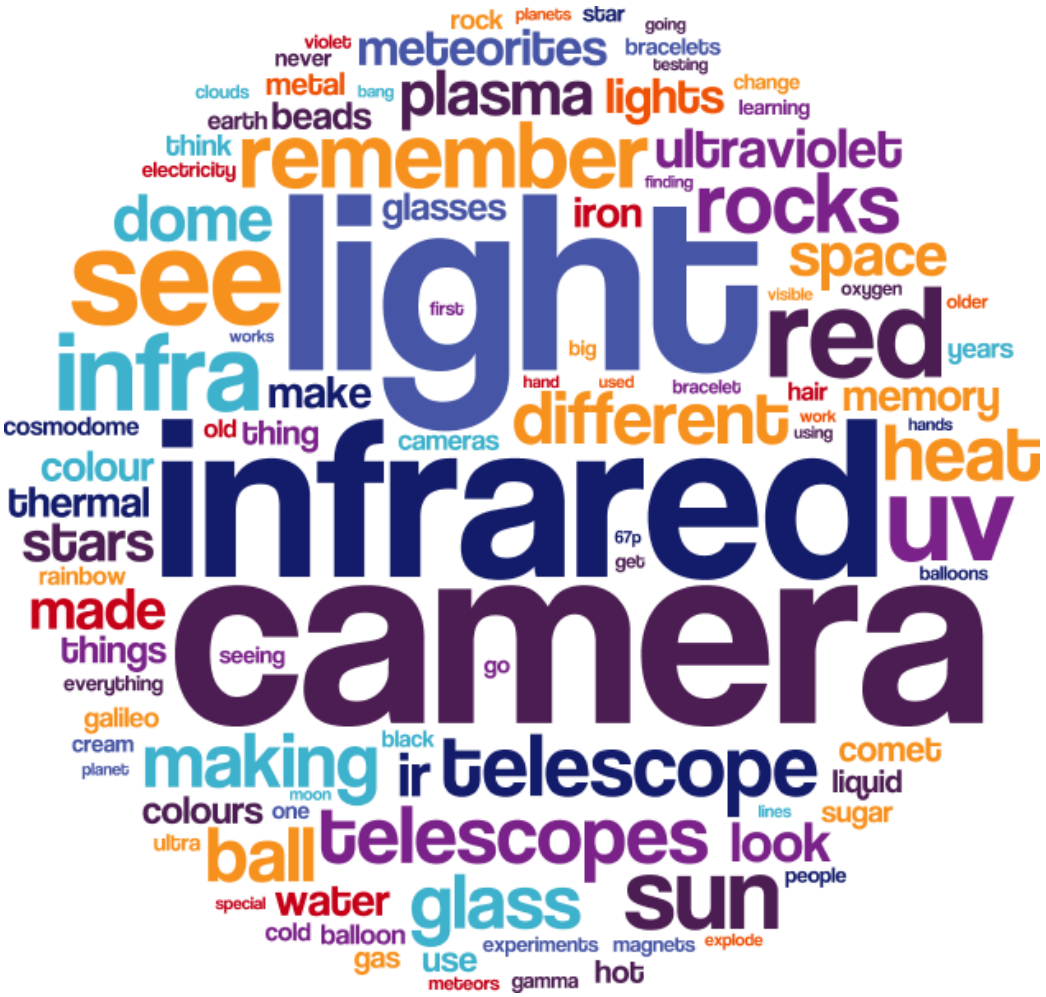
"I'll remember never to look at the sun with my telescope."

"That light travels at 300,000,000 m per second."

"Infra-red camera. I found out my hands are very cold."

"Galileo made the first telescope."

Figure 4-9 'What were the two things (bits of knowledge or experiences) that you think you'll most remember from this workshop?'– post workshop



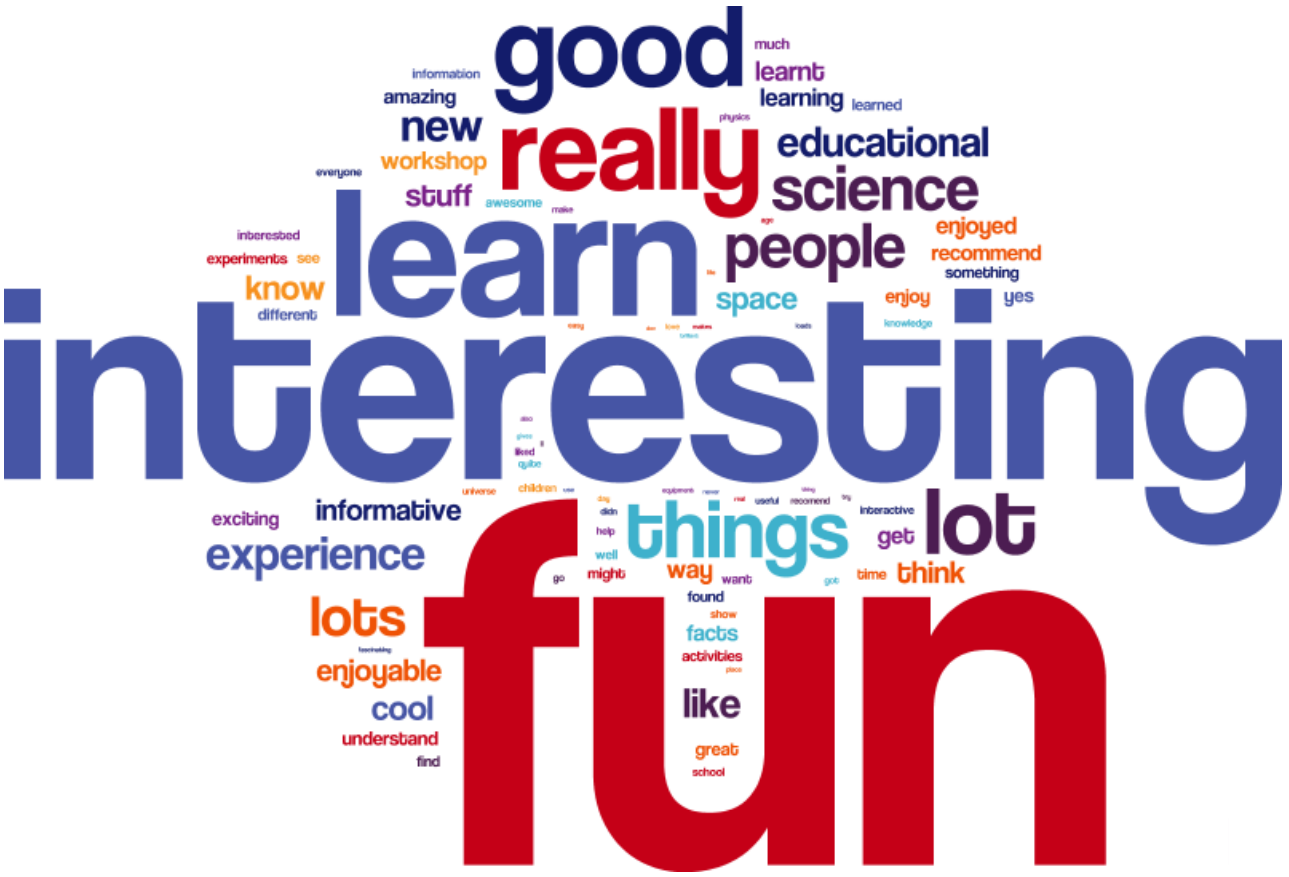
83% of workshop participants stated that they would recommend the workshop to others. Figure 4-10 below illustrates analysis of the reasons given, with ‘fun’ and ‘interesting’ the words that those who would recommend the workshop were most likely to use to describe it:

“Because it is very interesting and useful.”

“I would tell them because it is fun but you learn new things.”

“Because it was the coolest thing ever.”

Figure 4-10 Whether they would recommend the workshop – post workshop



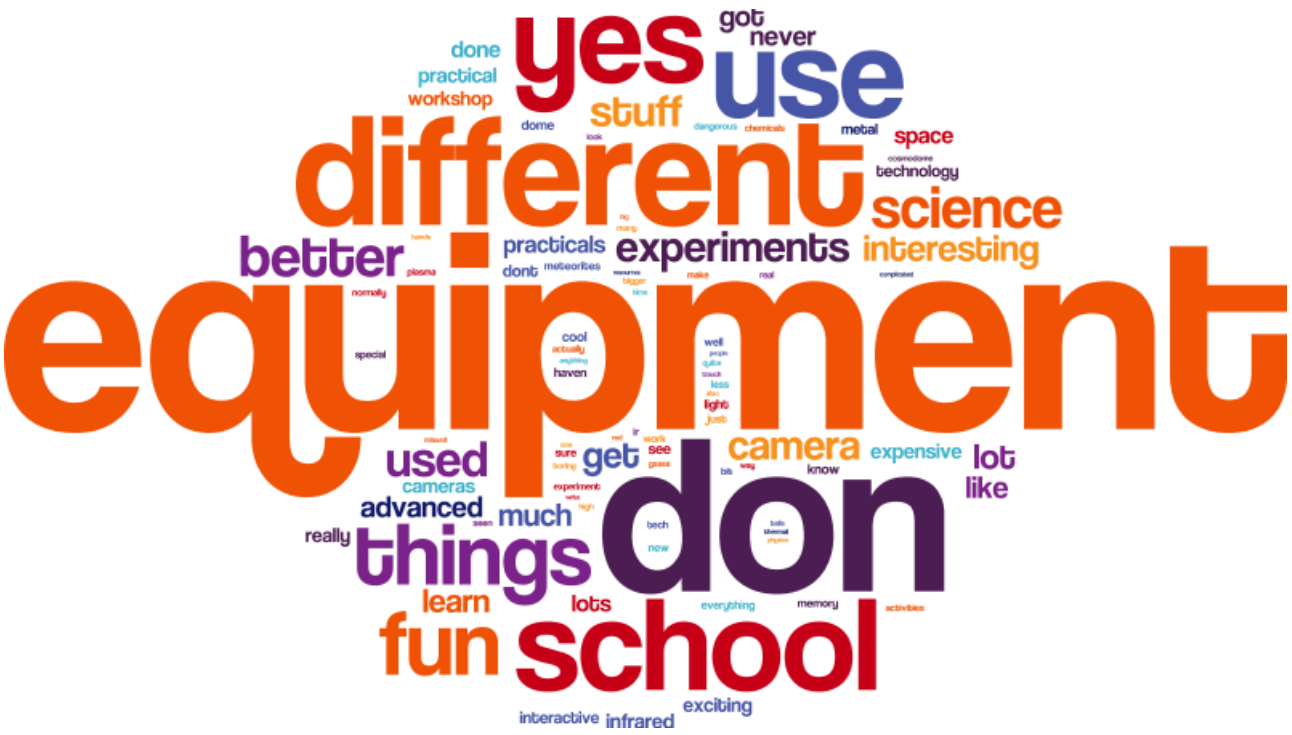
Difference from school

Lastly, participants were asked about the ways in which the workshop was different from school. As shown earlier, a high proportion encountered equipment that they had not used before and this was reflected in the comments provided, as shown in Figure 4-11 below and in the comments below:

"At school, we don't have any of the equipment."

"Different more advanced things used."

Figure 4-11 Ways the workshop was different from school – post workshop



Key findings summary – student workshop responses

- 73% of participants indicated that they liked science ('really/ quite') before attending a workshop. 79% of those interviewed after a masterclasses stated that their interest in studying science had increased as a result of attending.
- Before attending, 29% indicated that they wanted a career in science ('definitely/ possibly') this rose to 61% after the workshop.
- 68% indicated that they had used equipment in the session that they had not used before.
- 83% of participants stated that they would recommend the workshop to others.

4.4. Student Workshop (8-13) – teacher responses

87 teachers (of students age 8-15) provided feedback for the student workshop events (although not all provided feedback for every question). Only 21% were aware of the STFC prior to attending the workshop.

Ratings

Evaluation was against a rating scale of Very Good, Good, Poor and Very Poor. The ratings provided by teachers for the workshop were very positive. None of the measures received a negative rating, although 8% rated the venue attended as average.

As shown below, 87% of teachers rated the workshops as 'very good' overall. Very Good was also given as a rating for the equipment and the knowledge of staff by 92% and 91% of respondents respectively.

Figure 4-12 Ratings (% very good) – teacher workshop evaluation

Base: Overall (86); Content (87); Knowledge (87); Equipment (86); Venue (84)

97% of those who provided feedback on value for money agreed that the sessions did represent value for money and the same proportion indicated that they would recommend the sessions to others.

What teachers most liked

When asked what they most liked about the workshops and why, the activities and equipment came up most frequently in the responses:

"Hands on activities and equipment were great. Children really engaged. The light and colour activities complemented our work in school."

"Leaders very good - friendly. Talked to the children at their level. Clear explanations. Very well prepared. Liked the variety of activities. All children could take part."

"The opportunity the students had to use the equipment not just shown it."

Figure 4-13 What liked most about workshops - teachers rating as very good

Difference from school

When asked about the aspects of the workshop that they were not able to deliver in school, the responses given most often related to equipment:

"The majority of the activities because we wouldn't have the equipment."

"Whilst we can deliver the theory, we are unable to provide the resources and equipment that was brought in today."

"Anything requiring equipment like IR camera, UV light etc."

Figure 4-14 Workshop word cloud –aspects not able to deliver in school – teachers

Student motivation

When asked how the workshop sessions would affect student motivation, teachers frequently commented on the positive effect that they would have:

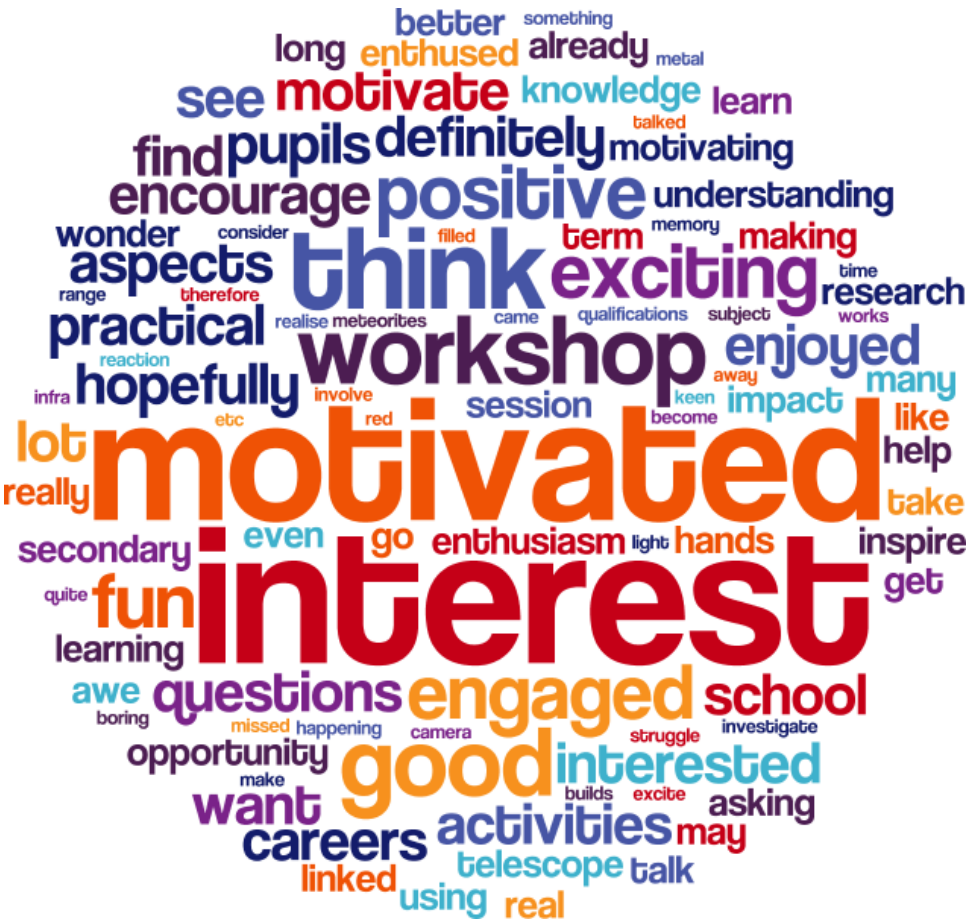
"They were motivated and talked about the activities a lot when they came out of the session, therefore it builds on their interest in science."

"I could see that several of the students enjoyed the challenge of the event and it was very motivational."

"I'm sure our science staff will have no trouble motivating pupils after this!"

"I think it could ignite interest in science careers."

Figure 4-15 Workshop word cloud –effect on students - teachers



Whether teachers would recommend

There were a number of reasons given by those who would recommend the workshop as to the reason for this response. The most common responses related to them being fun, offering 'great' experiences and the knowledge of those providing the sessions:

"Fun and informative. The content was advanced but kids loved it."

"Help teachers understand that experiments can be fun and controlled. Hopefully encourage more practical work in science."

"Great to get children's interest in science."

"Staff are knowledgeable and enthusiastic, it allows independent enquiry and inspires motivation in science."

Figure 4-16 Workshop word cloud – teachers' feedback on reasons they would recommend (base = 97% of respondents/those who stated they would recommend the workshop)

Additional feedback

Enjoyment of and appreciation for the workshop sessions was evident when teachers were asked for any additional feedback that they wished to provide:

"Good communication skills of the presenters."

"Very good session, would be good to team it with a museum."

"Fabulous. The children really enjoyed it."

Figure 4-17 Workshop word cloud – any other comments – teachers

Key findings summary – teacher workshop responses

- 87% of teachers rated the workshops as very good.
- 92% rated the equipment used as very good and 91% for the knowledge of staff.
- 97% would recommend the sessions to others.

4.5. Pre and post student masterclass (age 12-16)

Data was collected both before and after the masterclasses that were part of the EYU programme. While not all of the questions used before and after were the same, the results do give an indication of the effect the sessions had on the participants.

It should also be noted that those completing the questionnaires before and after the session were not necessarily the same people and it is not possible to track the responses of individuals before and after the event.

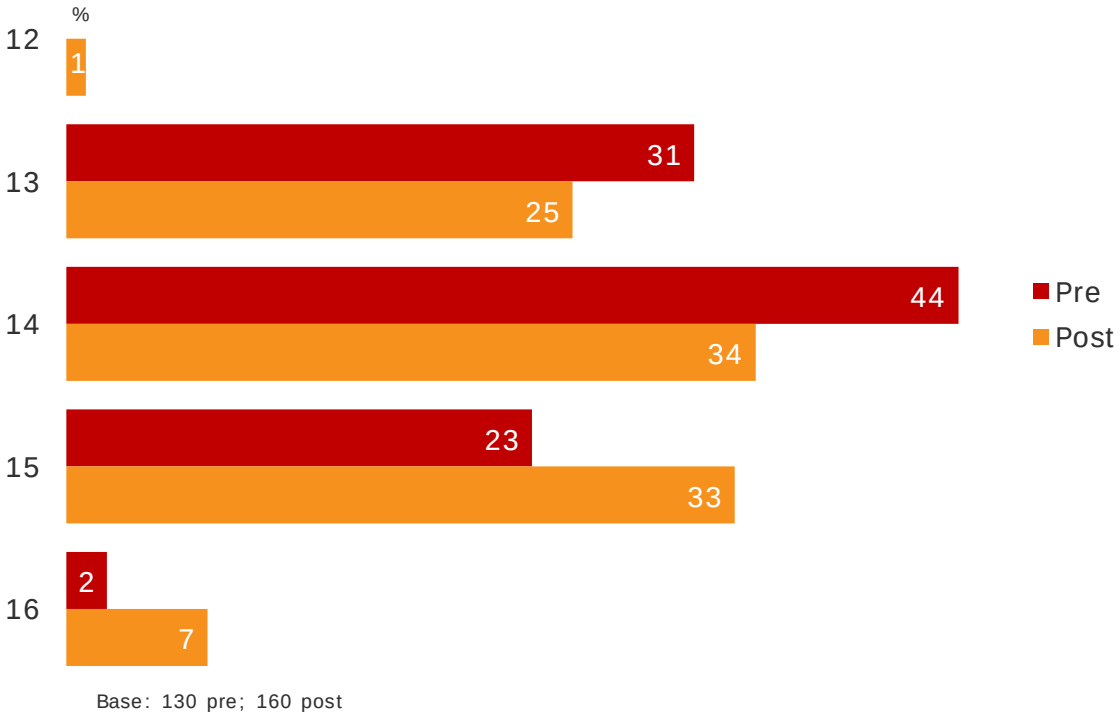
4.5.1. Attendee number, age and gender

130 participants completed a questionnaire prior to attending a masterclass and 160 completed a questionnaire after attending one of these sessions. In total, 2,134 participants attended a masterclass run as part of the programme.

97% of participants were from state schools in the UK. 6 in 10 were from schools located in the least deprived areas of the England (top 2 groups). This is higher than the average across England as a whole where around 40% of the population are in the top 2 quintiles.

The gender splits for those interviewed before and after the masterclass were relatively similar. Following the workshop, 58% of those providing feedback were female compared to 48% who were male[5]. There was an older age profile recorded for providing feedback after the masterclass, with 4 in 10 aged 15 and 16 (40%) compared to 25% of those interviewed before.

Figure 4-18 Age of respondent sample – pre and post masterclass



Base: 130 pre; 160 post

[5] Percentages do not equal 100% due to rounding

4.5.2. Pre masterclass

Interest in studying science

While the proportions who 'definitely/ may' want to continue studying science were the same across genders prior to the masterclass (65% each), there were some variations for other measures shown in Table 4-11 below. Males were more likely to be undecided, with 3 in 10 stating that they were not sure about continuing (30%). By contrast, 15% of females were not sure, while 19% indicated that they 'probably/ definitely' would not continue (5% amongst males).

Table 4-11 Interest in studying science by gender – pre masterclass

	GENDER	
	Male (N=57)	Female (N=72)
Definitely / may continue (NET)	**65%**	**65%**
I definitely want to continue studying science	47%	38%
I may continue studying science	18%	28%
I am not sure	30%	15%
Probably / definitely won't continue (NET)	**5%**	**19%**
I probably won't continue studying science	5%	14%
I definitely do not want to continue studying science	0%	6%

When analysed by age, interest was highest amongst the youngest age group, with 93% of 13 year olds interested in continuing to study science at all and 63% who 'definitely' wanted to continue.

Table 4-12 Interest in studying science by age – post workshop

	AGE		
	13 (N=40)	14 (N=57)	15-16 (N=31)
Definitely / may continue (NET)	**93%**	**56%**	**47%**
I definitely want to continue studying science	63%	37%	25%
I may continue studying science	30%	19%	22%
I am not sure	8%	25%	34%
Probably / definitely won't continue (NET)	**0%**	**19%**	**19%**
I probably won't continue studying science	0%	16%	13%
I definitely do not want to continue studying science	0%	4%	6%

Interest in a career in science

There was little difference in interest in a career in science by gender. Males were slightly more likely than females to state that they 'definitely/ possibly' wanted such a career (47% compared to 43% amongst females). Amongst both genders, 35% were unsure about pursuing a career in science. Overall, 45% indicated that they were interested in a career in science.

Table 4-13 Interest in a career in science by gender – pre masterclass

	GENDER	
	Male (N=57)	Female (N=72)
Definitely / possibly want (NET)	**47%**	**43%**
Yes, I definitely want a career in science	21%	24%
Yes, I possibly want a career in science	26%	19%
I'm not sure	35%	35%
Don't / definitely don't want (NET)	**18%**	**22%**
No, I don't want a career in science	12%	17%
No, I definitely don't want a career in science	5%	6%

When analysed by age, enthusiasm for a career in science was again highest amongst the youngest respondents. 63% of 13 year olds indicated interest in a career in science, with 33% stating that this was something that they 'definitely' wanted.

Table 4-14 Interest in a career in science by age – pre masterclass

	AGE		
	13 (N=40)	14 (N=57)	15-16 (N=31)
Definitely / possibly want (NET)	**63%**	**42%**	**28%**
Yes, I definitely want a career in science	33%	19%	16%
Yes, I possibly want a career in science	30%	23%	13%
I'm not sure	33%	32%	44%
Don't / definitely don't want (NET)	**5%**	**26%**	**28%**
No, I don't want a career in science	5%	19%	19%
No, I definitely don't want a career in science	0%	7%	9%

4.5.3. Post masterclass

Interest in studying science

As shown in Table 4-15 below, females indicated that the masterclass had more of an effect on their interest in studying science than males (75% 'a lot/ a bit' more interested compared to 66% amongst males, 71% overall). However, when looking at how much more interested they were, a higher proportion of males indicated a stronger interest with 29% indicating that they were 'a lot' more interested (29% compared to 24% females) while 51% of females stated that they were 'a bit' more interested (compared to 37% males).

Table 4-15 Interest in studying science by gender – post masterclass

	GENDER	
	Male (N=73)	Female (N=80)
More interested (NET)	**66%**	**75%**
A lot more interested in studying science	29%	24%
A bit more interested in studying science	37%	51%
Neither more nor less interested in studying science	30%	21%
Less interested (NET)	**4%**	**4%**
Less interested in studying science	1%	3%
A lot less interested in studying science	3%	1%

As for other events, interest in studying science was higher amongst younger participants following the masterclass. Around three-quarters of those aged 14 and under indicated that their interest in studying science had increased as a result of attending the masterclass (75%) compared to 62% of 15 year olds.

Table 4-16 Interest in studying science by age – post masterclass

	AGE			
	12-13 (N=40)	14 (N=52)	15 (N=50)	16 (N=11)
More interested (NET)	**75%**	**77%**	**62%**	**64%**
A lot more interested in studying science	33%	27%	20%	27%
A bit more interested in studying science	43%	50%	42%	36%
Neither more nor less interested in studying science	25%	23%	26%	36%
Less interested (NET)	**0%**	**0%**	**12%**	**0%**
Less interested in studying science	0%	0%	6%	0%
A lot less interested in studying science	0%	0%	6%	0%

Interest in a career in science

58% of all respondents were more interested in a career in science after attending a masterclass. There was a greater difference recorded with regards to interest in a career in science following the masterclass when analysed by gender. Two-thirds of females indicated that they were more interested in a career in science (66%), with 20% 'a lot' more interested following the event. By comparison, 48% of males were more interested following the masterclass, while a similar proportion stated that they had 'no particular view' on this (44%).

Table 4-17 Interest in a career in science by gender – post masterclass

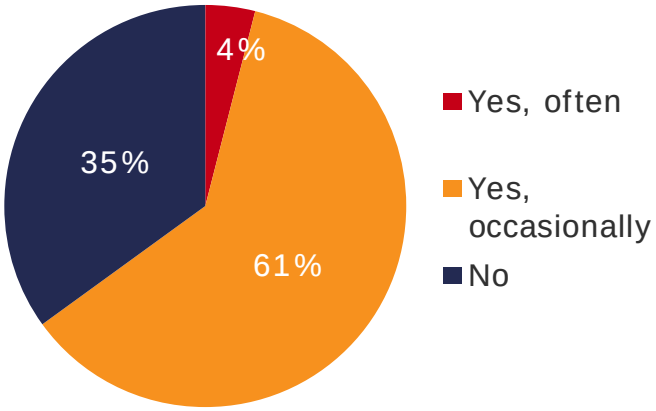
	GENDER	
	Male (N=73)	Female (N=80)
More interested (NET)	**48%**	**66%**
I am now a lot more interested in a career in science	19%	20%
I am now a bit more interested in a career in science	29%	46%
No particular view	44%	30%
Less interested (NET)	**8%**	**4%**
I am now less interested in a career in science	4%	0%
I am now not at all interested in a career in science	4%	4%

The results were slightly more mixed when analysed by age. However, it appears that the masterclasses had the greatest effect on increasing interest in a career in science amongst those aged 14, 67% of whom stated it had some effect and 27% of whom felt 'a lot' more interested after attending one of these events.

Use of equipment

Participants at the masterclass were more familiar with the equipment than those who attended the workshops. Overall, around two-thirds of participants had used the equipment before (4% often and 61% occasionally), while for 35% the equipment used was new.

Figure 4-198 Whether used equipment before – post masterclass



Base: 155

Whether would recommend to others

High proportions of participants stated that they would recommend the masterclass to others (82%). This was particularly so for females, 86% of whom would recommend it compared to 76% of males. By age, it was once again those aged 14 who were more likely to recommend the masterclasses to others (91%).

Table 4-18 Whether would recommend the event by gender and age – post masterclass

	AGE				GENDER	
Base	12-13 (N=41)	14 (N=55)	15 (N=50)	16 (N=11)	Male (N=76)	Female (N=81)
Yes	80%	91%	72%	82%	76%	86%
No	2%	4%	2%	0%	3%	2%
Not sure	17%	5%	26%	18%	21%	11%

When asked if the masterclass would help with science lessons at school (see Table 4-20 below), 70% females stated that it would (70%) compared to 62% of males. Younger participants were more likely to feel that the masterclass would help, particularly those aged 12-13 (73% agreed that the event would help).

Table 4-19 Whether the event would help with school science classes by gender and age – post masterclass

	AGE				GENDER	
Base	12-13 (N=41)	14 (N=52)	15 (N=50)	16 (N=11)	Male (N=73)	Female (N=80)
Yes	73%	71%	56%	64%	62%	70%
No	5%	2%	10%	18%	12%	1%
Not sure	23%	27%	34%	18%	26%	29%

Most liked and most memorable

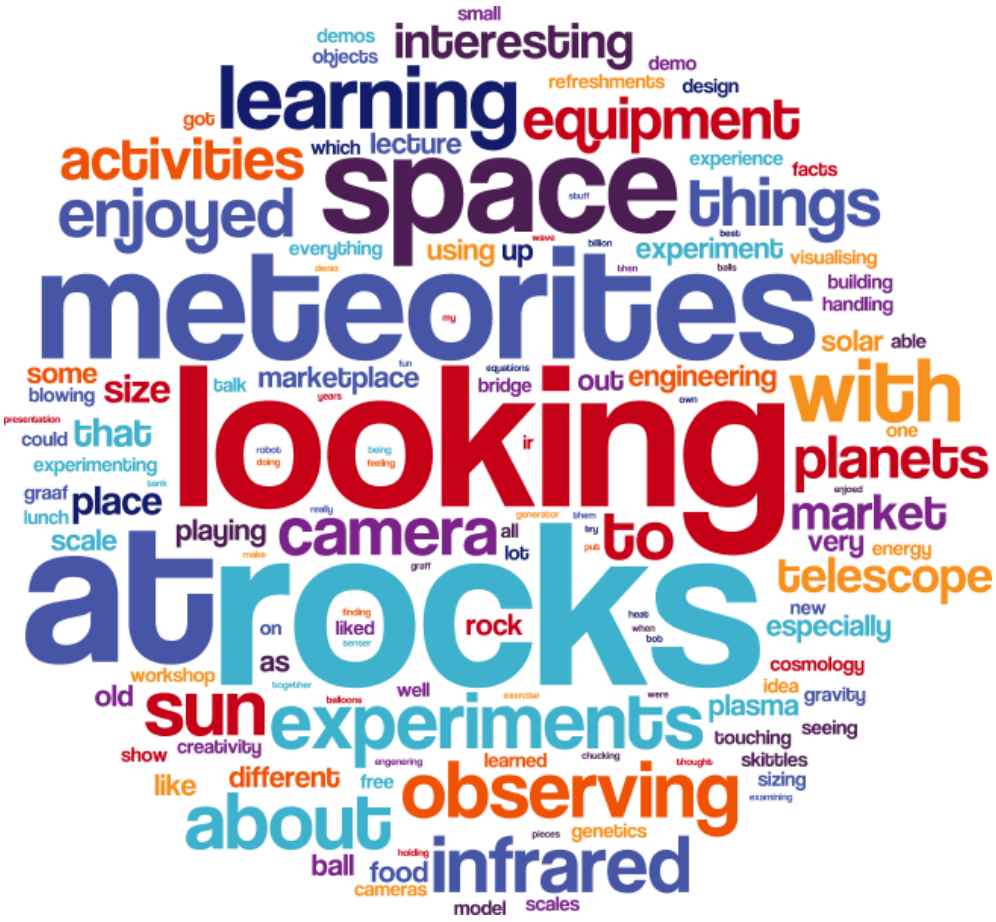
When asked what they liked most about the masterclass, the most frequently given responses related to being able to look at and in some cases, handle items during the masterclass, namely the rocks and meteorites:

"I enjoyed looking at the meteorites and finding out about them."

"Handling rocks that were 4 billion years old."

"It was a rather pleasurable experience with many varieties of activities which I thoroughly enjoyed. The most interesting activity was looking at the sun through the telescope. I was able to see the sun, which was red, surrounded by flares."

Figure 4-20 What liked most – post masterclass



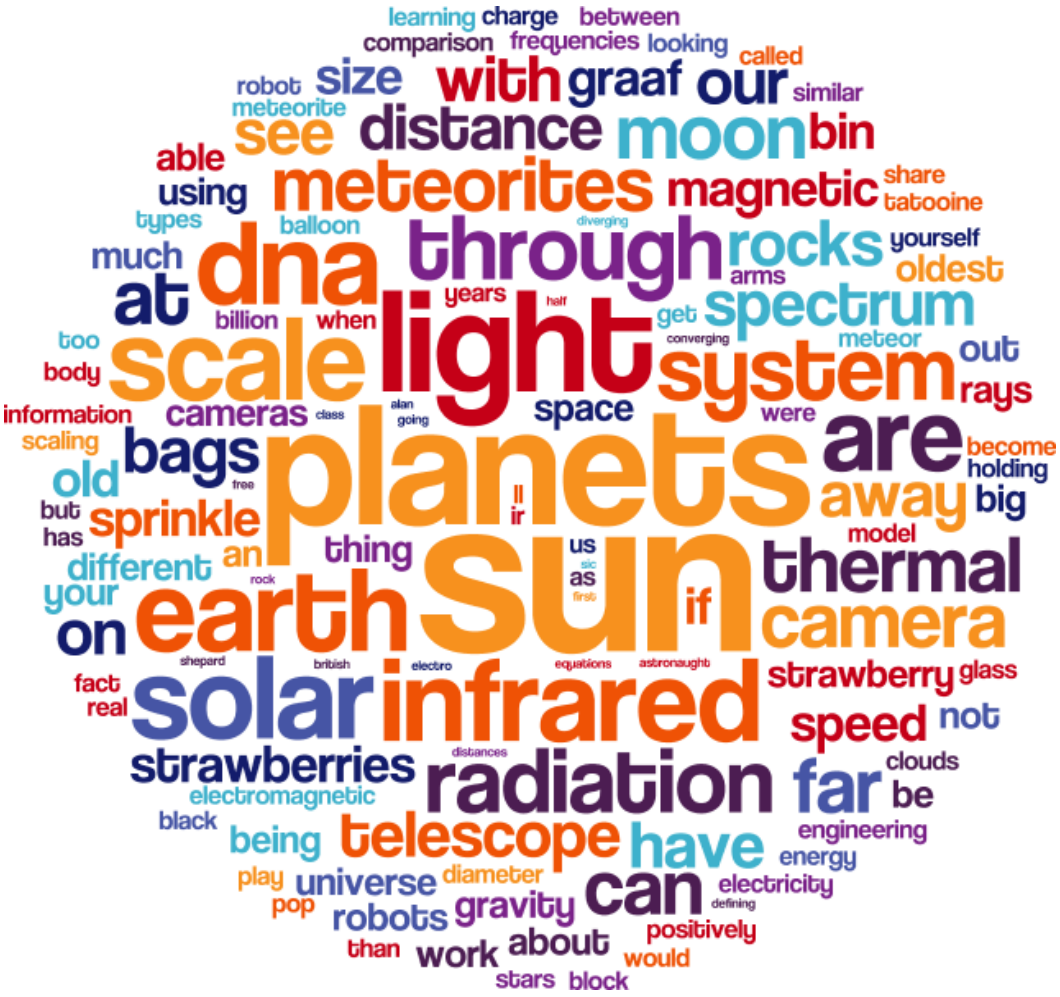
The most frequently provided responses when asked what participants were most likely to remember related to the sun and the planets including:

"That the sun is losing weight by flakes energy balls being released from the magnetic field."

"How long it takes to get to different planets."

"That you cannot have a scale model of the planets and sun in a book."

Figure 4-21 What will remember most – post masterclass - students



Key findings summary – student masterclasses

- 65% of those interviewed before a masterclass were interested in continuing to study science compared to 71% of those interviewed after.
- 45% of those interviewed before attending a masterclass indicated that they were interested in a career in science compared to 58% of those interviewed after the masterclass.
- 82% said that they would recommend the masterclass to others.

4.6. Teacher evaluation of student masterclass

4.6.1. Attendee number

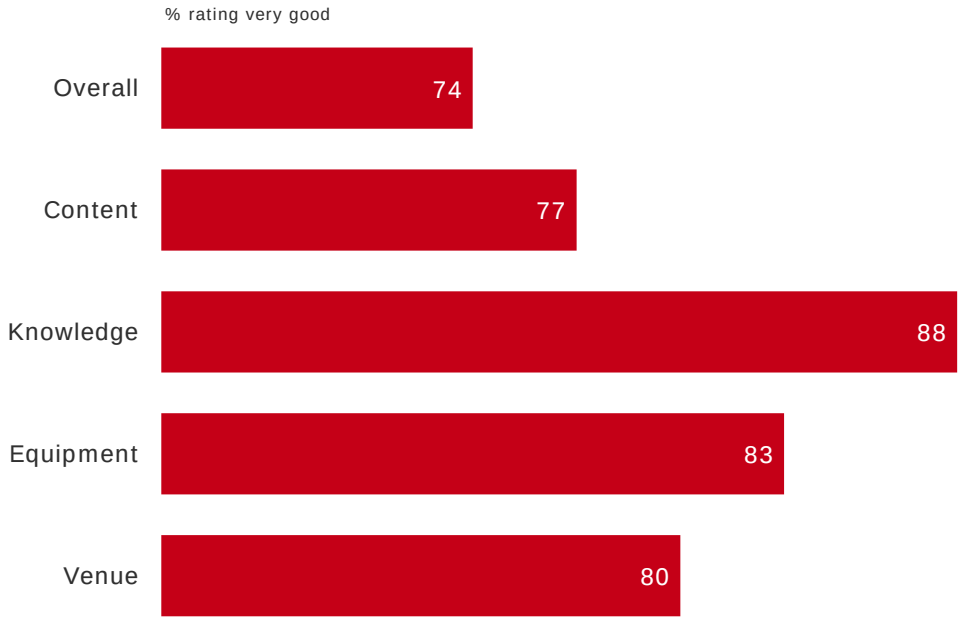
61 teachers provided feedback as part of the programme masterclass evaluation (although not all provided feedback for every question). Around a quarter of participants (27%) were aware of the STFC prior to attending a masterclass.

Ratings

The ratings provided by teachers for the masterclasses were very positive with none of the measures shown in Figure 4-22 below receiving a negative rating.

As shown below, around three-quarters gave an overall rating of very good (74%) while the highest rating was given for the knowledge of the staff running the sessions (88%).

Figure 4-22 Masterclass ratings (% very good) – teachers



Base: Overall (54); Content (53); Knowledge (50); Equipment (54); Venue (54)

All of the 35 respondents who provided a rating agreed that the sessions were value for money. All of the 46 who provided a rating for recommendation stated that they would recommend the sessions to others.

Most liked

The activities provided and the hands on opportunities for students were the aspects that participants most liked about the masterclasses:

"I really enjoyed the hands-on activities and also being in the dome listening to the presentation."

"Range of activities to inspire the children."

"Student involvement was good and hands-on activities engaged learners."

"Very interactive lots of practical activities - great knowledge shared by student leaders."

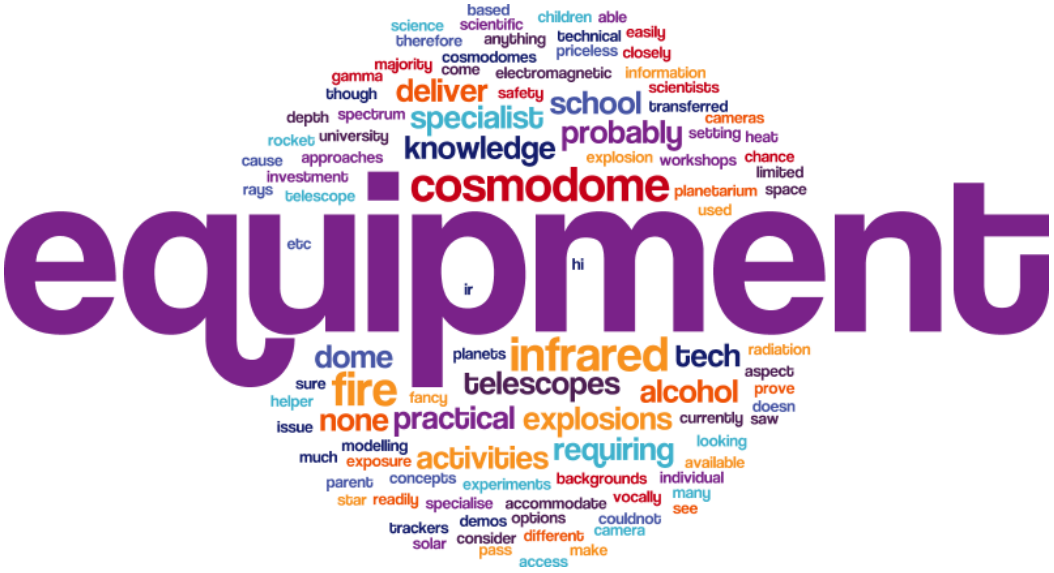
Figure 4-23 Masterclass word cloud – what liked about session – teachers

Difference from school

One of the aspects that came through in the student post workshop evaluation that was different from school was the equipment used. As shown in Figure 4-24 below, this was also reflected in the feedback from teachers on the aspects of the masterclasses that they would not be able to deliver in school.

"Equipment would be an issue."

Figure 4-24 Masterclass word cloud – aspects not able to deliver in school – teachers



Student motivation

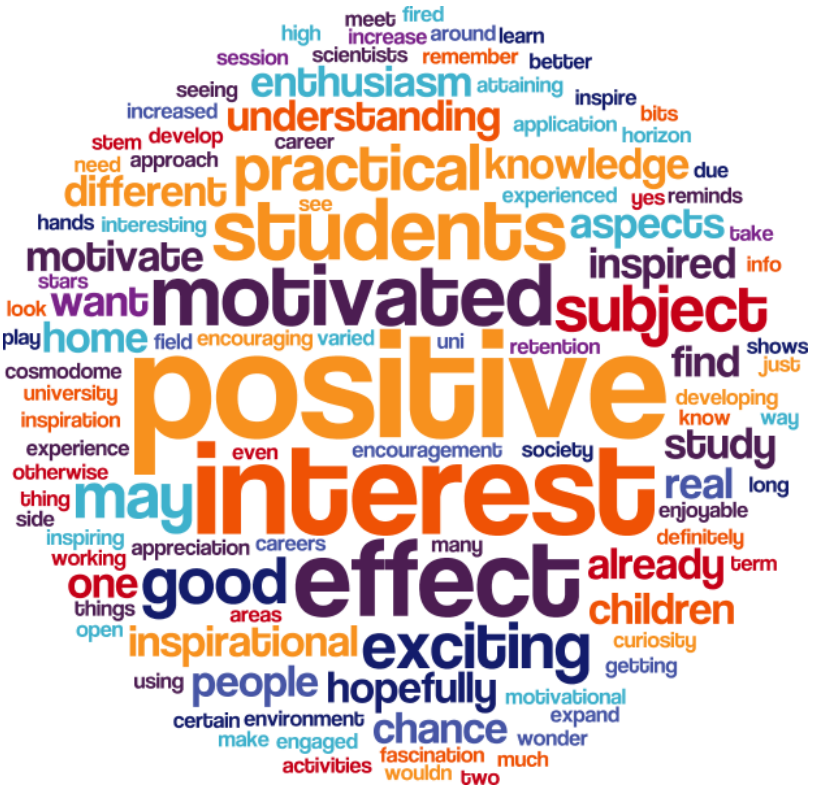
When asked how the masterclass sessions would affect student motivation, teachers frequently commented on the positive effect that they would have:

"Open their horizon; positive approach about science; getting them fired up."

"Develop interest in the practical application of the subject."

"Interest in science increased. Enthusiasm for a career in science."

Figure 4-25 Masterclass word cloud – effect on student motivation – teachers



Whether would recommend to others

As highlighted earlier, 100% of the 46 who provided a response regarding recommendation stated that they would recommend the sessions to others. The sessions were seen as great opportunities for the children and a way to engage them:

"Activities that children would not normally have a chance to do."

"Free; informative; great way to enthuse children."

"Great experience for younger children to see what university is like."

"Great for kids to see and understand."

Figure 4-26 Masterclass word cloud – whether would recommend – teachers

Additional feedback

Participants were given the opportunity to provide any additional thoughts on the session they attended (see Figure 4-23 overleaf). Overall, the responses were positive, however, there were some constructive comments given on the activities provided:

"Slightly longer time for some of the activities."

"For Year 6 it could have been improved by maybe less activities that allow them to be hands on themselves in the workshop/exhibition area. It felt a bit rushed."

"Children enjoyed it and said "they did not realise how amazing science was."

"Thoroughly enjoyed this and the pupils enjoyed talking to scientists."

Figure 4-27 Masterclass word cloud – any other comments – teachers

Key findings summary – teacher masterclass evaluations

- Around a quarter of participants (27%) were aware of Science and Technology Facilities Council prior to attending a masterclass.
- Around three-quarters gave an overall rating of very good (74%) while the highest rating was given for the knowledge of the staff running the sessions (88%).
- All of the 35 respondents who provided a rating agreed that the sessions were value for money.

5. Looking back to Phase 1

Results from Phase 1 and Phase 2 are not directly comparable due to the many different variables across delivery and support to venues, survey approaches and tools venues and event types. However, the following observations can be made:

- Overall, the number of children and adults attending Phase 2 events was around two-thirds the volume that attended Phase 1 (c.75,000 v c.123,000). This is thought to reflect the lower level of delivery investment in Phase 2 (in terms of support and budget for delivery at venues.)

- In both years, feedback was overwhelmingly positive for all the event types, across all audiences.

- Similar positive outcomes and themes emerged from both phases.

- In Phase 1, 41% of workshop participants and 37% of masterclass participants stated that having attended the event they would be more interested in **a career in science**. This proportion increased markedly in Phase 2 to 61% of workshop participants and 71% at the masterclasses. In Phase 1, 56% of workshop participants and 43% of masterclass participants stated that having attended the event they would be more interested in **studying science**. This proportion again increased markedly in Phase 2 to 79% of workshop participants and 58% at the masterclasses. The current evaluation cannot explain these uplifts, however it may reflect that lessons learnt in Phase 1 were used to improve training delivered in Phase 2 and hence impact. It may also reflect variations resulting from differences in the profile of those attending the events and the venues where the events took place.

6. Recommendations

- Going forward, these findings highlight an opportunity to continue to build understanding of how to engage under-represented audiences by further exploring the emerging differences related to age and gender in the EYU programme. There is also an opportunity to capture better information to explore the influence of socio-economic and other demographic factors. This will require a mixed evaluation approach including quantitative and qualitative methods.