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# What pupils think of science in primary schools

Baseline research for the Wellcome  
Primary Science Campaign



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## **AUTHORS AND ACKNOWLEDGEMENTS**

The authors of this report are Sarah Leonardi, Hayley Lamb, Josie Harrison, Rebecca Steer and Peter Howe.

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## EXECUTIVE SUMMARY

CFE Research with the University of Manchester has been commissioned by the Wellcome Trust to monitor and evaluate the impact of its UK-wide Primary Science Campaign. The campaign's vision is that all pupils will experience an exciting, inspiring and relevant science education at primary school that leaves them well-prepared to progress further in science, and well-informed about science in their everyday lives. A key part of the campaign is Explorify; a free resource of engaging, creative science activities for primary school teachers. It has been designed to stimulate curiosity, discussion and debate and will support teachers to encourage children to think like scientists. This short report summarises baseline findings about pupils' perceptions on subjects taught in their school, followed by specific questions about science and how science can be applied in the wider world. Further analysis explores the views of pupils linked to surveys completed by the Science Leader at their school.

### Approach

A computer-assisted telephone interview of **902** Science Leaders (or other senior leaders where there was either no Science Leader in the school or they were unavailable at the time of interview) was undertaken to obtain data in relation to the strategic direction of science. This research was undertaken as part of a larger baseline study which included an online survey of **1,010** teachers. The full findings of these surveys were reported in the '*State of the Nation*' report of UK primary science education<sup>1</sup> designed as baseline research for the Wellcome Trust Primary Science Campaign.

Respondents to the science leadership survey were asked to disseminate a survey to pupils in their schools during class time. This first wave of surveys was completed between December 2016 and March 2017, with responses received from at least 49 schools. In order to increase both the number and diversity of pupil responses (in terms of school type and geography), a second wave of research was undertaken. In total, **2,444** responses were received from at least **64** schools across the UK; however, this is likely to be an underestimate as 195 pupil responses could not be linked to a school name. These findings should therefore be treated as illustrative only and not representative of the UK population. To enable additional analysis to be undertaken, responses to the science leadership survey were linked with the pupil survey findings to examine any relationships that exist. **2,112** pupil records were linked with their school's science leadership survey records.

The terminology used to refer to pupil's year groups differs throughout the UK. For consistency, we have adopted the English and Welsh terminology of year groups and key stages throughout the report (see Table 1 on page 5). **Throughout the report all differences in the commentary are statistically significant** at the 5% Confidence Level.

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<sup>1</sup> <https://wellcome.ac.uk/sites/default/files/state-of-the-nation-report-of-uk-science-education.pdf>

## Key findings

### View of science at school

Across the UK, most pupils report they have studied science at their school in the current academic year. Nearly half report liking science ‘a lot’, however this is lower than for PE, art and maths. Younger pupils appear to like science in their school more than older pupils but are also more likely to report that it is ‘too easy’. This highlights the link between perceived difficulty of science and their enjoyment of it. A slightly higher proportion of male pupils report positive views towards science both within their school and more generally when compared to females. However, the differences are not large.

**90%** of pupils remember studying science in their school during the academic year. Most pupils in **England and Wales (93%)** reported this compared to **74%** in **Northern Ireland**.

**44%** of pupils like science at school ‘a lot’, **42%** ‘like it’ and **14%** ‘don’t like it’ or ‘really don’t like it’.

**48%**

of pupils ‘like science a lot’ in schools where a **Science Leader** has **undertaken CPD in the last year** compared to **37%** where they had not undertaken CPD

**46%**

of pupils ‘like science a lot’ in schools where respondents to the science leadership survey state there is a **good range of science equipment** at their school, compared to **40%** where they state ‘to some extent’

A higher proportion of **male pupils like science at school ‘a lot’ 46%** compared with **female pupils (41%)**. There were also differences with other subjects. Male pupils are more likely to state ‘a lot’ to PE, maths and science and female pupils to art, music and English.

| Like the subject ‘a lot’ | Male pupils | Female pupils |
|--------------------------|-------------|---------------|
| PE                       | 74%         | 57%           |
| Maths                    | 53%         | 41%           |
| Science                  | <b>46%</b>  | <b>41%</b>    |
| Art                      | 53%         | 75%           |
| Music                    | 35%         | 50%           |
| English                  | 26%         | 36%           |

Pupils in larger schools report more positive views towards science lessons than those in small schools. School size does not, however, affect the proportion who state ‘I like it a lot’ in relation to the other subjects they study, with the exception of music where pupils in larger schools also report more positive views.

A higher proportion of pupils state **'I like it a lot' to science** from **larger schools** (300 or more pupils) (**47%**) when compared to **smaller schools** (99 pupils or less) (**31%**).

**73%** of pupils **find the difficulty of science 'about right'**, only **8%** find it **'too difficult'** and **19%** find it **'too easy'**.

Pupils in **younger year groups** are more likely to report that **science lessons are 'too easy'** but also that they like **science lessons 'a lot'**. Those pupils who report that **science is 'too difficult'** are more likely to **not like the subject (56%)** compared with those who state it is **'too easy' (8%)**.

Pupils have split views about how clever you have to be to do science, with younger pupils stating 'a lot' more frequently than older pupils. Pupils in younger year groups are also more likely to worry 'a lot' about science lessons being too hard. A higher proportion of **pupils also worry about science lessons being too hard and state that you have to be clever to do science** where respondents to the science leadership survey consider that **not enough time is spent teaching science**.

**86%**

of pupils 'agree' or 'agree a lot' that learning science in school is fun

**32%**

of pupils 'agree' or 'agree a lot' that they worry about science lessons being too hard

**Worrying about science lessons being hard 'a lot'** was more common amongst **those who found science lessons 'too difficult' (23%)** compared to those who consider science to be **'about right' (6%)**. Pupils in **younger year groups** are **more likely to worry** about science lessons being too hard; **18% in Year 3** report they worry 'a lot' about science compared with **5% in Year 6**.

**15% of pupils** who attend a school where a respondent to the science leadership survey **'strongly disagreed'** that **enough time was spent teaching science worried about science** compared with **those who 'agree' (8%) or 'strongly agree' (6%)**.

## Views of science

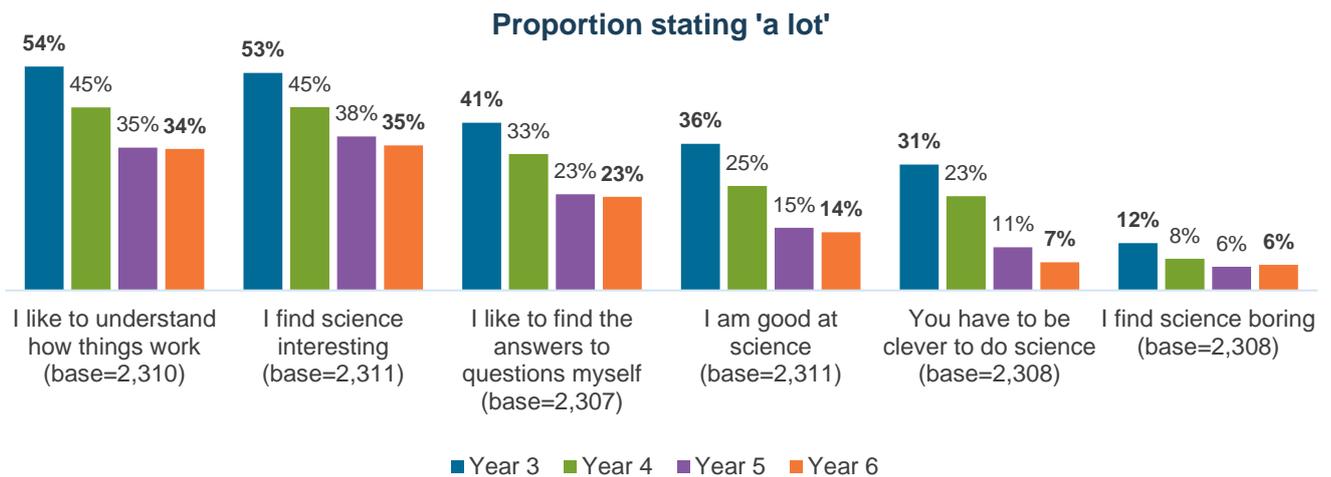
**93%** of pupils 'agree a lot' or 'agree' that they **'like to understand how things work'** whilst **86%** **'find science interesting'** and **80%** **'like to find the answers to questions themselves'**. Views about whether someone needs to be **'clever to do science'** vary: **41%** 'agree' or 'agree a lot' whilst **59%** 'disagree' or 'disagree a lot'.<sup>2</sup>

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<sup>2</sup> Percentages do not add to 100% due to rounding

**21% of pupils** who attend a school where a respondent to the science leadership survey ‘strongly disagreed’ that **enough time was spent teaching science** ‘agree a lot’ that **you have to be clever to do science** compared with **those who ‘agree’ or ‘strongly agree’ (13%)**.

A higher proportion of **male pupils ‘agree a lot’** to statements **compared to female** students. **Younger pupils also report ‘a lot’** to all statements compared to those in **Year 6**.



Those pupils who report they like science lessons ‘a lot’ at school report more positive views about the role science plays in ‘helping’ (e.g. can help people be healthy) and their general views of science (find science interesting, being good at science).

Nearly all pupils ‘agree a lot’ or ‘agree’ (**92%**) that **‘science can help the environment’** followed by **91%** who state that **‘science can help people make things’**. **81%** report that **‘science can help animals’** and **80%** state that **‘science can help people be healthy’**.

A higher proportion of pupils who stated **‘I like it a lot’** to their science lessons report **more positive views of how science can help** across all statements when compared to other pupils.

## Future career aspirations

29% of pupils report a **science related job** when asked what job they would like when they grow up. The type of job differs by gender:

- **male** pupils are more likely to want a job as a **‘scientist’** or in **engineering** (or a related industry)
- **female** pupils are more likely to state they wish to be a **vet** (or another job related to animals) or pursue a career in **healthcare/medicine**

**‘Finding new species of animals and sea life’**

**‘I would like to be an astronomer’**

**‘Either a professional footballer or engineer’**

**‘I would like to be a scientist and help people’**

**‘I would like to have a job in forensics’**

**‘I would love to be a chemist mixing elements’**

**‘I want to help people and be a diabetic nurse’**

**‘Aircraft engineer in the Navy’**

**‘Cancer research scientist’**

**‘Be someone who helps other people or animals’**

# 01. INTRODUCTION AND METHODOLOGY

*This section introduces the aims and objectives of the study and summarises the research methods implemented for the baseline pupil survey.*

CFE Research, with the University of Manchester, has been commissioned by Wellcome to undertake monitoring and evaluation of its Primary Science Campaign between 2017 and 2021. The campaign’s vision is that all pupils will experience an exciting, inspiring and relevant science education at primary school that leaves them well-prepared to progress further in science, and well-informed about science in their everyday lives.

A key part of the campaign is Explorify; a free digital resource of engaging, creative science activities for primary school teachers. It has been designed to stimulate curiosity, discussion and debate and will support teachers to encourage children to think like scientists. CFE, with the University of Manchester, was commissioned to explore the nature of science delivery across the UK and evaluate the impact of the campaign until 2021. Specifically, our research activity focusses on three over-arching objectives:

- Monitoring awareness and the geographical reach of the campaign across UK schools to examine the national picture at each time point.
- Measuring the impact of the campaign on the profile, quality and quantity of science teaching in primary schools, in particular the average number of hours taught per week by classroom teachers on either a discrete or cross-curricular basis.
- Examining how the campaign is bringing about changes within schools and the nature of the impacts on subject leaders, classroom teachers and on pupils and schools as a whole.

This short report summarises baseline findings about pupils’ perceptions on subjects taught in their school, followed by specific questions about science and how science can be applied in the wider world. The terminology used to refer to pupils’ year groups differs throughout the UK. For consistency, we have adopted the English and Welsh terminology throughout the report. The equivalent year groups for Scotland and Northern Ireland are summarised in Table 1 for information:

**Table 1: Year groups by country**

| Age during school year | Key stage   | England and Wales    | Northern Ireland | Scotland |
|------------------------|-------------|----------------------|------------------|----------|
| 4-5                    | Foundation  | Reception/Foundation | Year 1/P1        | P1       |
| 5-6                    | Key Stage 1 | Year 1               | Year 2/P2        | P2       |
| 6-7                    |             | Year 2               | Year 3/P3        | P3       |
| 7-8                    | Key Stage 2 | Year 3               | Year 4/P4        | P4       |
| 8-9                    |             | Year 4               | Year 5/P5        | P5       |
| 9-10                   |             | Year 5               | Year 6/P6        | P6       |
| 10-11                  |             | Year 6               | Year 7/P7        | P7       |



## Method

A computer-assisted telephone interview of **902** Science Leaders (or other senior leaders where there was either no Science Leader in the school or they were unavailable at the time of interview) was undertaken to obtain data in relation to the strategic direction of science. A database of schools in the UK was compiled and a random stratified sample derived to ensure it was representative of the population from which it was derived. The surveys were undertaken between November 2016 and January 2017. This research was undertaken as part of a larger baseline study which included an online survey of **1,010** teachers. The full findings of these surveys were reported in the *'State of the Nation' report of UK primary science education*<sup>3</sup> designed as baseline research for the Wellcome Trust Primary Science Campaign.

Respondents to the science leadership survey were asked to disseminate a survey to pupils in their schools during class time. This first wave of surveys was completed between December 2016 and March 2017, with responses received from at least 49 schools. In order to increase both the number and diversity of pupil responses (in terms of school type and geography), a second wave of research was undertaken. The same schools who had previously agreed to disseminate the survey were asked to share the pupil survey between February and March 2018. Those schools who had participated in wave 1 and/or are taking part in Explorify were removed from the sample. This was to ensure no pupil completed the survey twice and findings can still be considered a true baseline prior to their engagement with the campaign.

In total, **2,444** responses were received from at least **64** schools across the UK; however, this is likely to be an under-estimate as 195 pupil responses could not be linked to a school name. These findings should therefore be treated as illustrative only and not representative of the UK population. To enable additional analysis to be undertaken, responses to the science leadership survey were linked with the pupil survey findings to examine any relationships that exist. 2,112 pupil records were linked with their school's science leadership survey records.

## This report

This report presents the combined findings from **both waves of the pupil survey**. Differences in the findings by school and respondent characteristics have been explored. All differences have been tested for statistical significance and **only those that are statistically significant** at the 5% Confidence Level **are reported in the commentary of the report**. Not all findings summarised in the supporting graphs are statistically significant.<sup>4</sup> Not all percentages in the report will sum to 100% due to rounding. The characteristics of the respondents in each sub-group are provided in the Appendix.

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<sup>3</sup> <https://wellcome.ac.uk/sites/default/files/state-of-the-nation-report-of-uk-science-education.pdf>

<sup>4</sup> Not all findings summarised in the supporting graphs are statistically significant. Please refer to the commentary and footnotes for statistically significant differences.

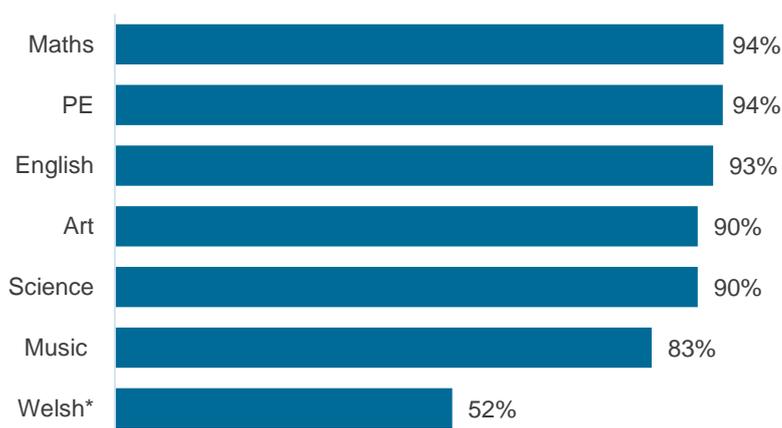
## 02. PUPILS VIEWS OF SCIENCE DELIVERY

*This section explores pupils' views of science delivered in their school.*

### Subjects studied at school

Pupils were asked what subjects they remembered studying since starting their current school year. Most pupils (in Years 3-6) report studying the majority of subjects asked about including maths, PE, English, art and science since the start of the school year (Figure 1). Most pupils in England and Wales (93%) reported science compared to 74% in Northern Ireland.<sup>5</sup> This could be as a result of differences in the curriculum as science is taught through the 'World Around Us' and pupils may not be aware they are studying science as part of this.

**Figure 1: Subjects studied at school by pupils (base=2,444, \*only pupils in Welsh schools were asked this: base=292)**



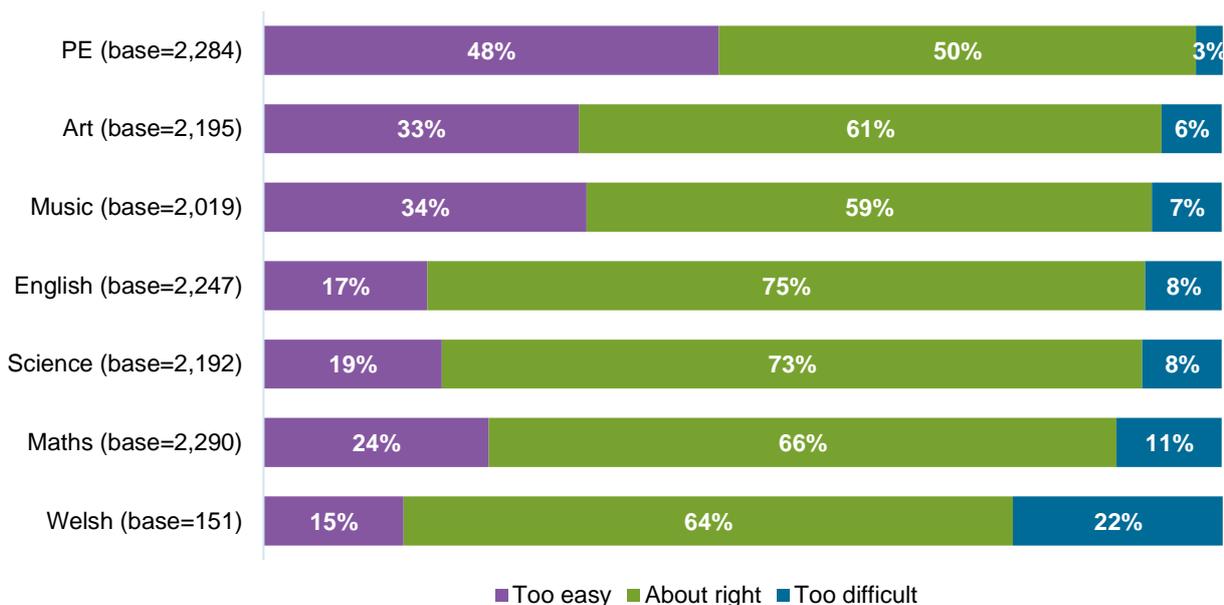
### Perceived difficulty of subjects studied

Pupils indicated whether they consider the subjects they have studied to be 'too easy', 'about right' or 'too difficult'. Only 8% reported that they find science 'too difficult', which is broadly in line with most other subjects identified, with the exception of Welsh (22%). Less than one-fifth (19%) of pupils state that science is 'too easy', which again is comparable to maths and English. Creative subjects (art and music) and PE were the areas which pupils rated as being 'too easy'.

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<sup>5</sup> There was no statistically significant difference when compared to Scotland.

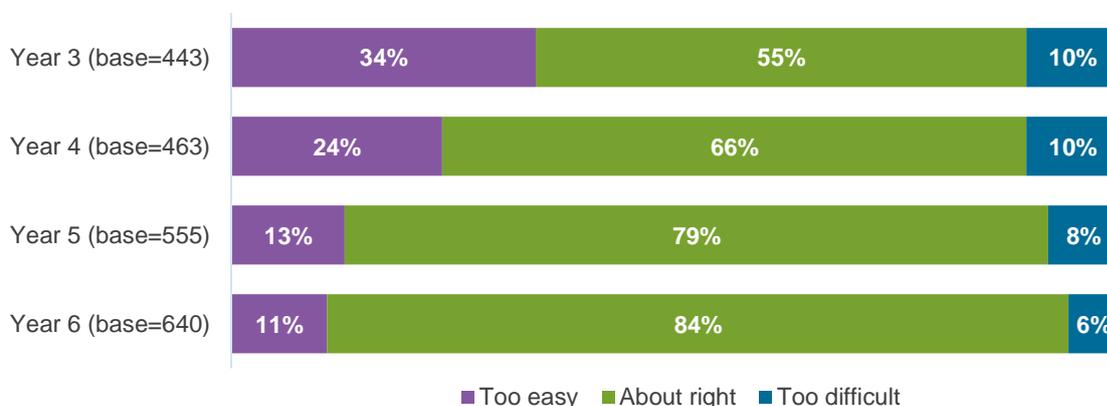
**Figure 2: Extent to which subjects are perceived to be easy or difficult**



Pupil’s views on the difficulty of science varied by both school year and gender.

By school year, the proportion of pupils who reported that science was ‘too easy’ decreased by each subsequent year, with one-third (34%) of pupils in Year 3 finding science ‘too easy’ compared to just 11% of Year 6 pupils (Figure 3). However, this finding is not isolated to just science with a similar pattern found for all subjects (excluding Welsh).

**Figure 3: Extent to which science is perceived to be easy or difficult by year group<sup>6</sup>**



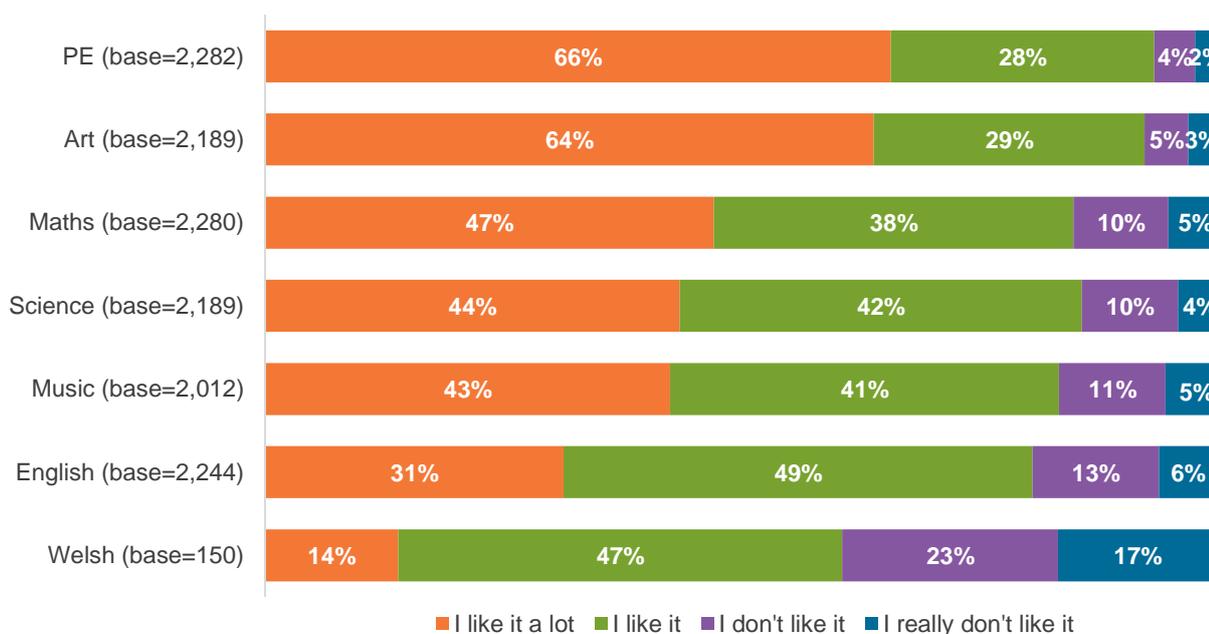
A slightly higher proportion of male pupils (21%) report that science is ‘too easy’ compared to 16% of female pupils. Conversely, a greater proportion of female pupils (76%) indicate that they find the difficulty of science to be ‘about right’ compared with males (71%).

<sup>6</sup> For the category ‘too easy’ there was a statistically significant difference for: Year 3 compared with Year 4, 5 and 6 and Year 4 compared with Year 5 and 6. For the category ‘too difficult’ there was a statistically significant difference for: Year 3 compared with Year 6 and Year 4 compared with Year 6.

## Enjoyment of subjects studied

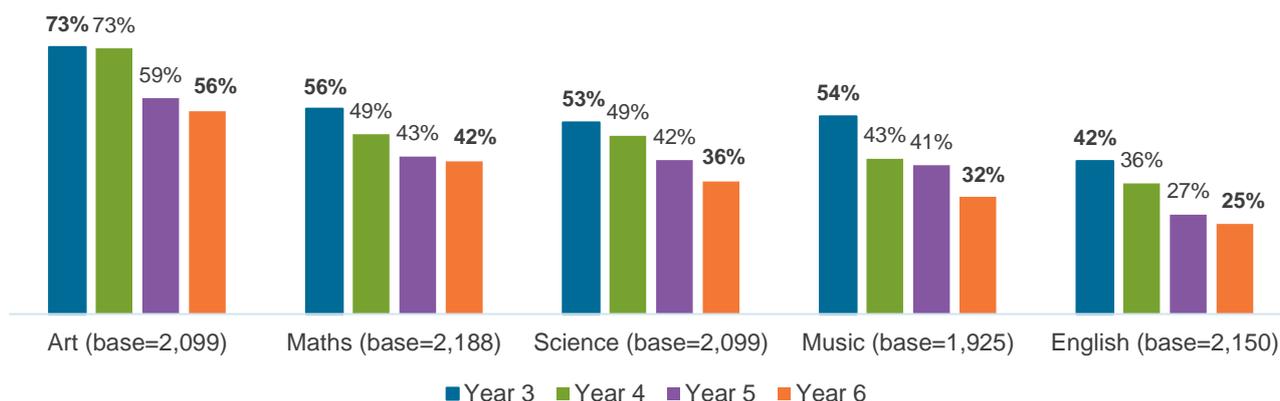
Pupils were asked whether they like the subjects they remember studying that year at school. A higher proportion like PE (66%) and art (64%) ‘a lot’. Whereas science is lower (with 44% of pupils stating ‘a lot’) but in line with maths (47%) and music (43%). Less than one-sixth of pupils (14%) report that they do not like science. Of these, 10% ‘don’t like it’ and only 4% ‘really don’t like it’.

**Figure 4: Extent to which subjects are liked by pupils**



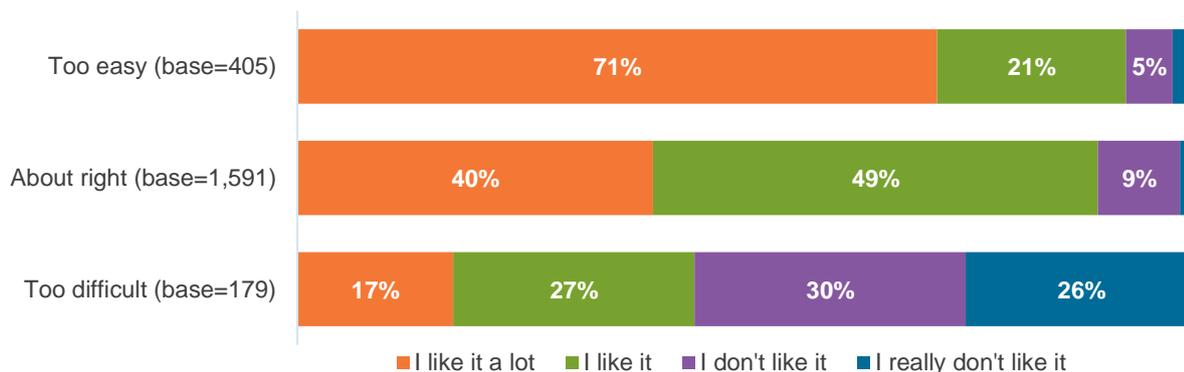
Further analysis reveals that younger pupils (Year 3) are more enthusiastic about most subjects than those in Years 5-6. This is reflected in science which is shown to be more popular (‘I like it a lot’) in earlier school years (Year 3 - 53%) when compared to Year 6 (36%). The same pattern is also found in other subjects (excluding PE and Welsh).

**Figure 5: Proportion of pupils who state “like [subject] a lot” by year group<sup>7</sup>**



This difference in year groups may in part be due to pupils having a tendency to like subjects more if they find them easy, with younger pupils overall reporting that subjects are easier. A higher proportion of pupils who consider science to be ‘too easy’ state that they like science ‘a lot’ (71%) when compared to those who indicate ‘about right’ (40%) or ‘too difficult’ (17%) (see Figure 6). Just over one quarter (26%) of pupils who state that science is ‘too difficult’ report that they ‘really don’t like it’ and 30% indicate that they ‘don’t like it’.

**Figure 6: Extent to which pupils like science by perceived difficulty of science<sup>8</sup>**



In investigating differences by gender, a slightly higher proportion of males report liking science ‘a lot’ (46%) when compared to females (41%). However, overall there is no difference between the total proportion of male and female pupils who ‘like it’ or ‘like it a lot’. For males, 87% collectively ‘like it’ or ‘like it a lot’; the equivalent figure for females is 85%.

There are similar differences by gender across all subjects, except Welsh (for the category ‘I like it a lot’). Collectively, when subject preference is examined by gender, a higher proportion of male pupils report that they like maths (53%) and PE (74%) ‘a lot’ compared

<sup>7</sup> For the category ‘I like it a lot’ there was a statistically significant difference for all subjects: Year 3 compared with Year 5 and 6. For subjects (excluding maths) there was a statistically significant difference: Year 4 compared with Year 6. No differences were found for Welsh due to low bases.

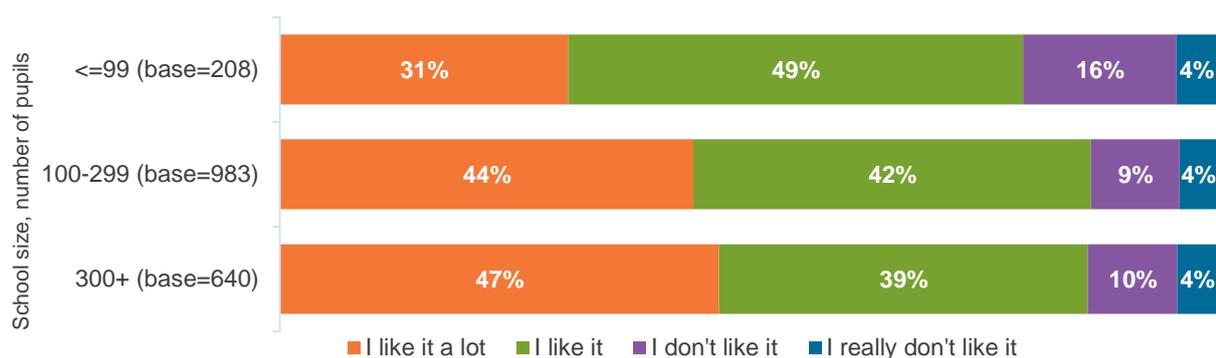
<sup>8</sup> For the category ‘I like it a lot’ there was a statistically significant difference for: ‘too easy’ compared with ‘about right’ and ‘too difficult’ and ‘about right’ compared with ‘too difficult’. For the categories ‘I really don’t like it’ and ‘I don’t like it’ there was a statistically significant difference for: ‘too difficult’ compared with ‘about right’ and ‘too easy’.

to female pupils (maths 41%; PE 57%). Conversely, a greater proportion of female pupils report that they like English (36%), art (75%) and music (50%) ‘a lot’ compared to males (English 26%, art 53% and music 35%). However, when those pupils who report that they ‘like’ or ‘like a lot’ their subjects are combined, the differences across most subjects by gender are reduced. The exception to this is English where only 73% of male pupils report that they ‘like’ or ‘like a lot’ this subject compared with 88% of female students widening the gender gap. Overall, only small proportions of pupils express that they ‘don’t like’ or ‘really don’t like’ subjects (with the exception of Welsh). This suggests that although there are some subjects that males and females are each more enthusiastic about, generally pupils report liking most subjects to some degree.

From the science leadership survey, pupils in schools with a Science Leader who had undertaken CPD in the last year were more likely to state that they ‘like science a lot’ (48%) compared to those where CPD had not been undertaken (37%). Where respondents to the science leadership survey state that there is a good range of science equipment at their school, a higher proportion of pupils report they ‘like science a lot’ (46%). The equivalent figure for those who consider good science equipment to be available ‘to some extent’ is 40%.

Respondents to the science leadership survey in larger schools are more likely to agree that they have a good range of equipment for hands-on science and that the school has the appropriate budget for resources. Within the pupils survey, as shown in Figure 7, science is also more popular (‘I like it a lot’) among pupils at larger schools (300 or more pupils) (47%) when compared to the smallest (99 pupils or less) participating schools (31%). In small schools there is a larger proportion of pupils that ‘don’t like it’ (16%) than in medium or large schools, where only 9% and 10% of pupils respectively dislike science. The proportion of pupils that ‘really don’t like it’ (4%) did not differ by school size.

**Figure 7: Proportion of pupils who state “like science a lot” by school size<sup>9</sup>**



The other subjects that were studied by pupils were also explored by school size. Only one other subject was influenced by school size in relation to the proportion of pupils stating

<sup>9</sup> For the category ‘I like it a lot’ there was a statistically significant difference for: pupils at large schools (300+ pupils) compared with small schools (99 pupils or less). For the category ‘I don’t like it’ there was a statistically significant difference for: pupils at small schools (99 pupils or less) compared with medium schools (100-299 pupils) and large schools (300+ pupils).

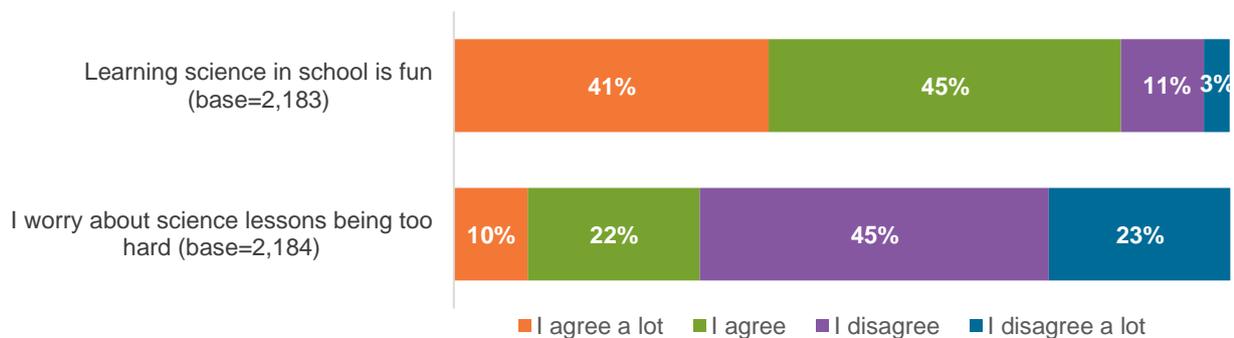


they ‘like it a lot’ with 44% of pupils in large schools reporting they like music ‘a lot’ compared with 37% in medium sized schools. Whereas, a slightly higher proportion of pupils in larger schools stated ‘I really don’t like’ English (9%) or maths (8%) compared with medium schools (4%, 3% retrospectively).

## Further views of science at school

Those pupils who had studied science were asked to what extent they agree with two further statements about science at their school. Over four-fifths (86%) of pupils ‘agree’ or ‘agree a lot’ that learning science in school is fun (Figure 8), which reflects the amount they like studying it (shown above). However, one third of pupils (32%) worry about science lessons being too hard.

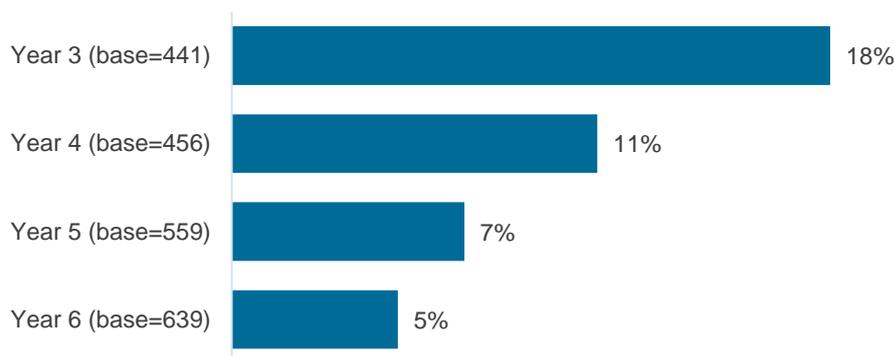
**Figure 8: Extent to which pupils agree with science learning in school**



A higher proportion of male pupils (44%) selected ‘agree a lot’ that learning science in school is fun compared to female pupils (37%); this reflects the earlier findings that male pupils like science ‘a lot’. Pupils in schools with more than 200 pupils are also more likely to ‘agree a lot’ that learning science in school is fun (44%) compared with pupils in schools with less than 199 pupils (33%).

Pupils in younger year groups are more likely to ‘agree a lot’ that they worry about science lessons being too hard than those in subsequent year groups. Although pupils in younger year groups report that science is ‘too easy’, this shows that they are more likely to be concerned that science lessons may be too hard.

**Figure 9: Proportion of pupils who “agree a lot” that they ‘worry about science lessons being too hard’, by year group<sup>10</sup>**



Of those pupils who report that science is ‘too difficult’, 23% ‘agree a lot’ and 35% ‘agree’ that they worry about science lessons being too hard. This is compared to 6% and 23% respectively for those who consider science to be ‘about right’.

When examining pupil survey responses in conjunction with responses from the science leadership survey, findings indicate that in schools where respondents’ strongly disagree that enough time is spent teaching science, there is a higher proportion of pupils who ‘agree a lot’ that they worry about science lessons being too hard (15%). In schools where respondents ‘agree’ or ‘strongly agree’ that enough time is spent teaching science, slightly smaller proportions of pupils report that they worry about science lessons being too difficult (8% and 6% respectively). This suggests that where respondents feel that enough time is allocated to science teaching, pupils feel less worried about science being too difficult.

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<sup>10</sup> For the category ‘agree a lot’ there was a statistically significant difference for: Year 3 compared with Year 4, 5 and 6 and Year 4 compared with Year 6.

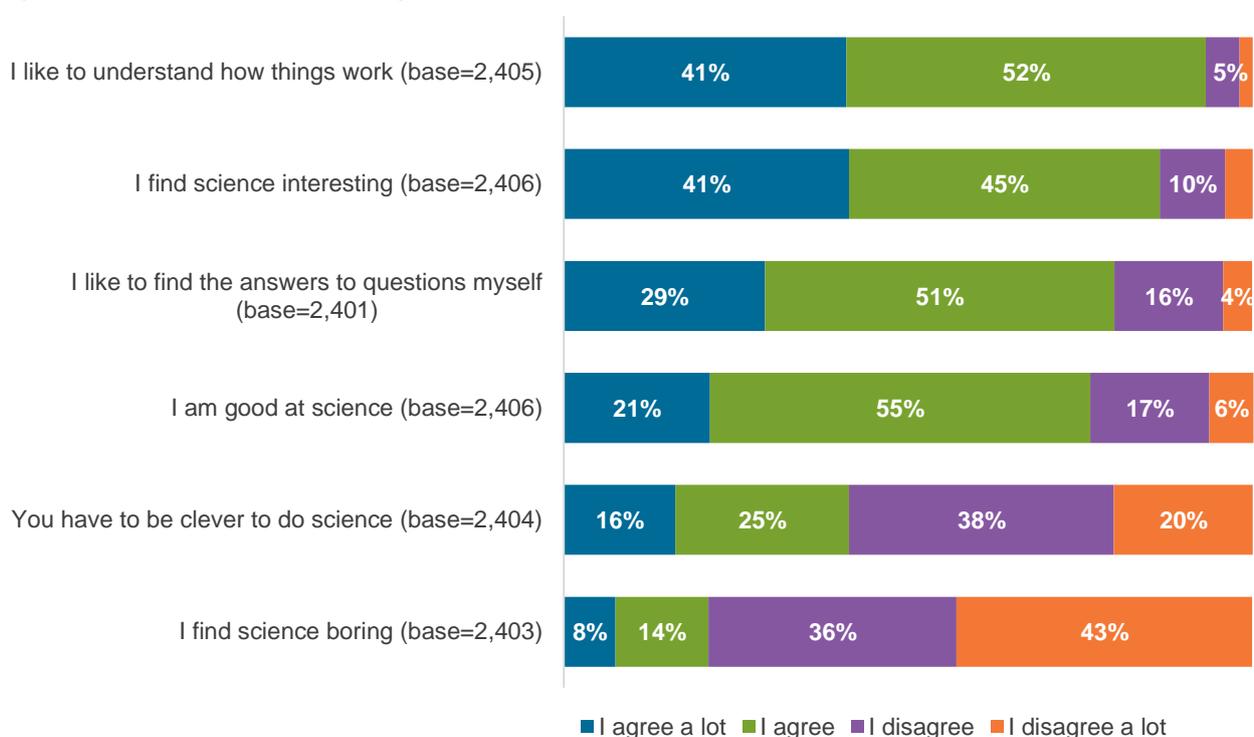
### 03. WIDER PERSPECTIVES OF SCIENCE

*This section explores pupils' views of science, how they think science can help and their future career aspirations.*

#### Views of science

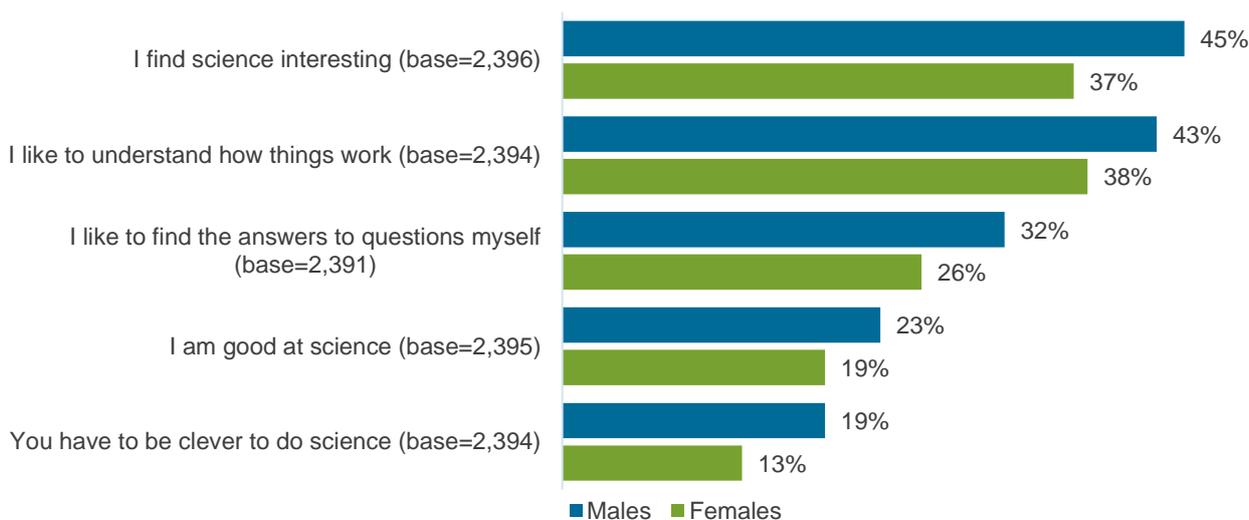
Pupils were asked to rate to what extent they agreed with statements about their personal views of science. The majority of pupils (93%) 'agree a lot' or 'agree' that they like to understand how things work whilst 86% find science interesting and 80% like to find the answers to questions themselves. Views about whether someone needs to be clever to do science vary: 41% 'agree' or 'agree a lot' whilst 59% 'disagree' or 'disagree a lot' highlighting a clear split in views.

**Figure 10: Extent to which pupils agree with science statements**



A higher proportion of male pupils' report they 'agree a lot' in response to five of the above statements compared to females (Figure 11). This reflects the previous findings in the report where a slightly higher proportion of male pupils stated they liked science 'a lot'.

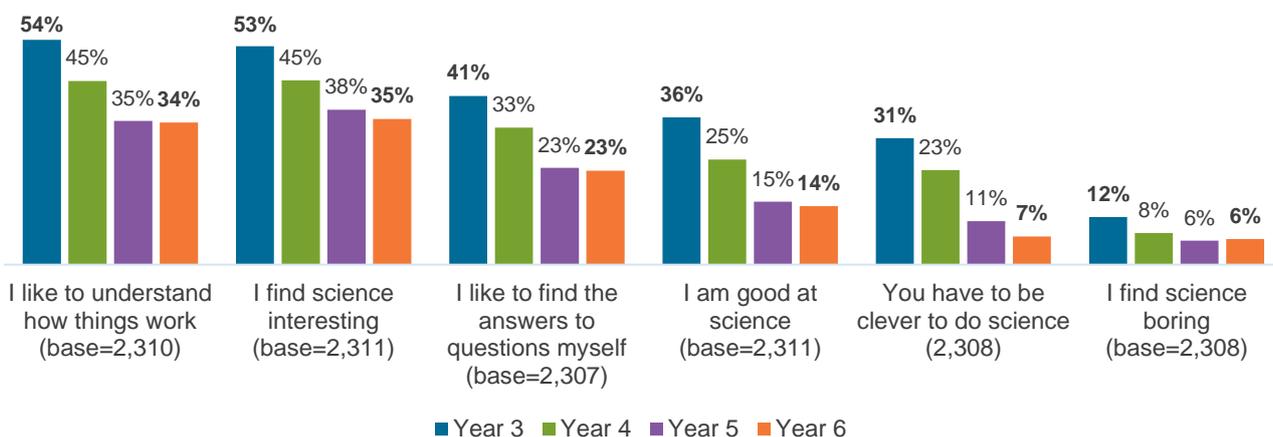
**Figure 11: Proportion of pupils who ‘agree a lot’ with science statements, by gender**



Males are also more likely to state ‘I disagree a lot’ in response to the statement ‘I find science boring’ (47%) compared with 39% of female students.

There are also differences by school year. Across these six statements a lower proportion of pupils in older year groups ‘agree a lot’ compared to younger age groups (Figure 12). This reflects previous findings whereby pupils are less likely to ‘agree a lot’ to statements as they get older. This may in part be due to finding science easier when they are younger. For example, 54% of pupils who report that science is ‘too easy’ state ‘agree a lot’ that they are good at science compared to 14% who state ‘about right’ and 8% who state ‘too difficult’.

**Figure 12: Proportion of pupils who ‘agree a lot’ with science statements, by year group<sup>11</sup>**

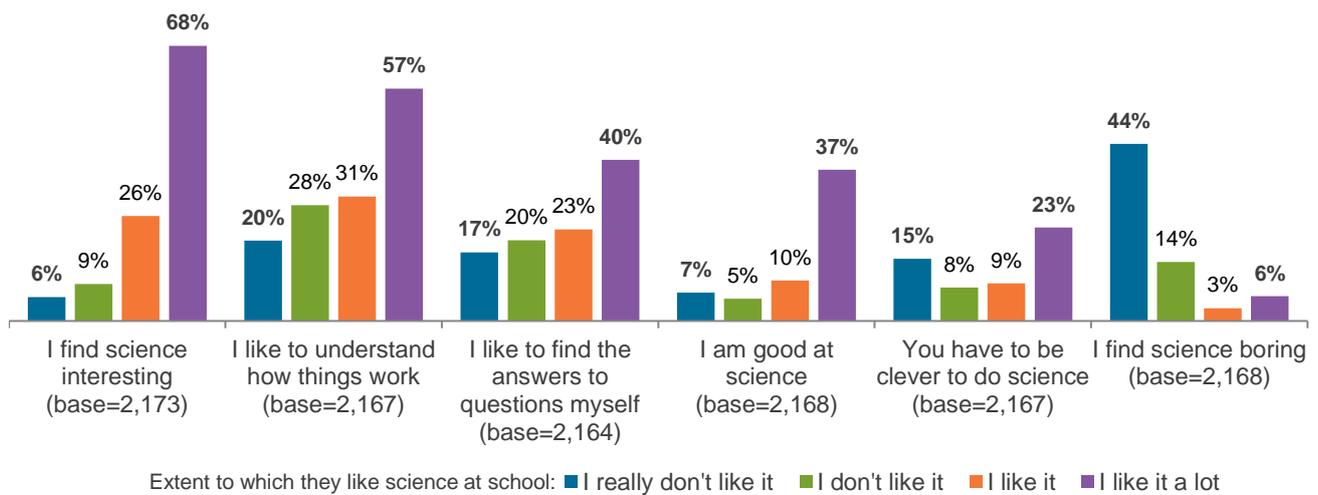


<sup>11</sup> For the category ‘I agree a lot’ there was a statistically significant difference for all statements: Year 3 compared with Year 5 and 6. For ‘I am good at science’, ‘I like to understand how things work’ and ‘you have to be clever to do science’ Year 3 compared with Year 4, 5 and 6 and Year 4 compared with Year 5 and 6. For ‘I like to find the answers to questions myself’ Year 4 compared with Year 5 and 6. For ‘I find science interesting’ Year 4 compared with Year 6.



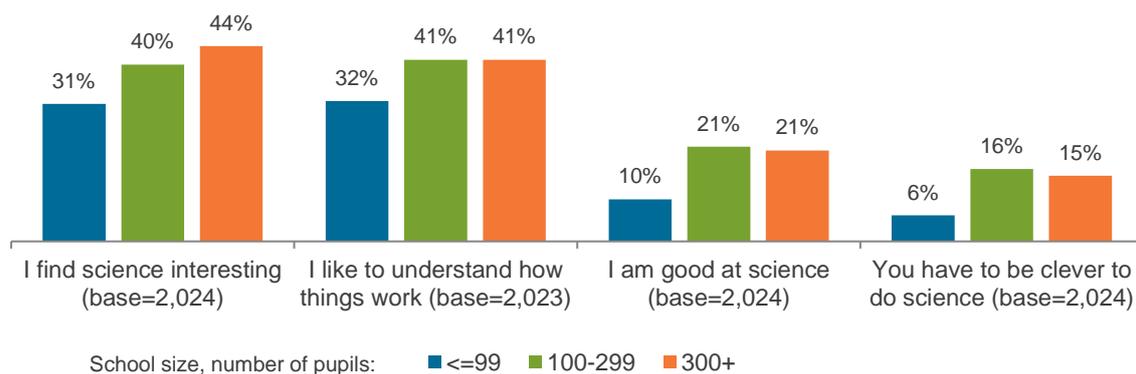
As may be expected, there were also differences by whether or not pupil's liked science lessons at school. A higher proportion of pupils who stated 'I like it a lot' report more positive views of science when compared to all other pupils (Figure 13). The statement that received more mixed views was 'You have to be clever to do science' with those who both 'like it a lot' (23%) and 'really don't like it' (15%) reporting 'I agree a lot' more frequently than those with less strong views (those who stated 'like it' or 'don't like it', 9% and 8% respectively).

**Figure 13: Proportion of pupils who 'agree a lot' with science statements, by 'whether or not they like science at school'<sup>12</sup>**



Differences in pupils' views also differed by school size (as with previous analysis). A lower proportion of pupils attending small schools (99 pupils or less) stated they 'agree a lot' to four of the statements shown in Figure 12 when compared to medium and large schools.

**Figure 14: Proportion of pupils who 'agree a lot' with science statements, by school size<sup>13</sup>**



<sup>12</sup> For the category 'I agree a lot' there was a statistically significant difference for all statements: 'I like it a lot' compared with 'I like it', for all statements (excluding 'I find science boring') differences for 'I like it a lot' compared with 'I don't like it', for all statements (excluding 'I find science boring' and 'you have to be clever to do science' differences for 'I like it a lot' compared with 'I really don't like it').

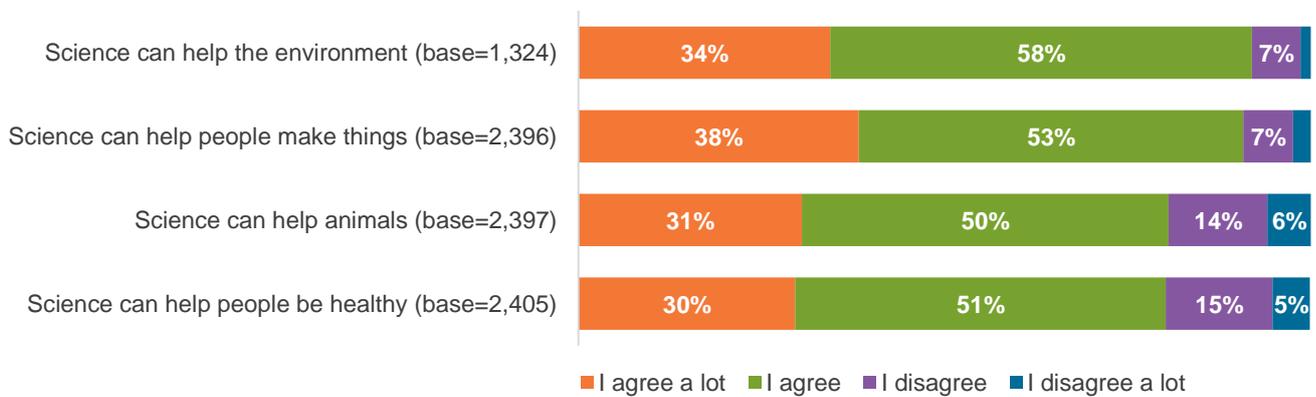
<sup>13</sup> For the category 'I agree a lot' there was a statistically significant difference for all statements: pupils in schools with 99 pupils or less compared with 100-299 and 300+.

In schools where respondents to the science leadership survey ‘strongly disagree’ that enough time is spent teaching science, a higher proportion of pupils ‘agree a lot’ that you have to be clever to do science (21%). Conversely, in schools where respondents ‘agree’ or ‘strongly agree’ that enough time is spent teaching science, pupils were less likely to ‘agree a lot’ (13%) that you have to be clever to do science. This suggests that in schools where Science Leaders feel that enough time is spent teaching science, pupils are less likely to perceive ‘cleverness’ as a barrier to science.

## How science can help

Nearly all pupils ‘agree a lot’ or ‘agree’ (92%) that ‘science can help the environment’<sup>14</sup> followed by 91% who state that ‘science can help people make things’. Four-fifths (81%) ‘agree a lot’ or ‘agree’ that science can help animals’ with a similar proportion (80%) stating that ‘science can help people be healthy’.

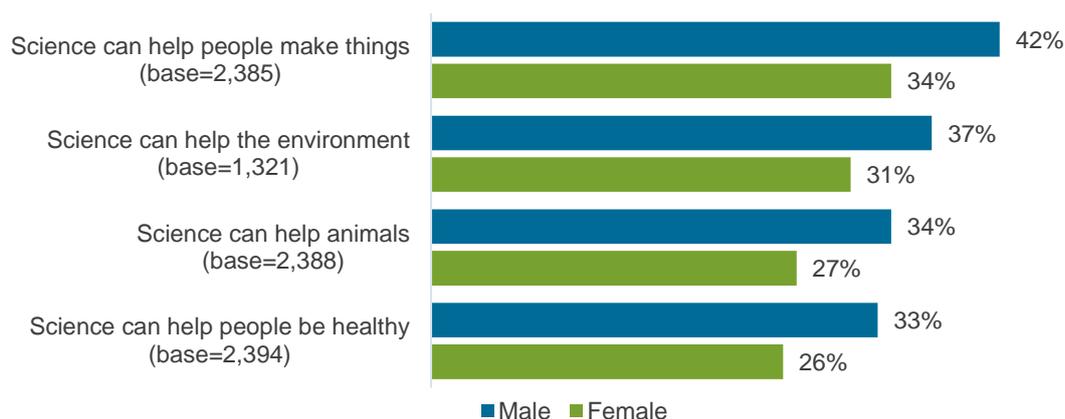
**Figure 15: Extent to which pupils agree with how science can help**



Again, a higher proportion of male pupils report they ‘agree a lot’ with all of the statements concerning the benefits of science to individuals, animals, and the environment compared to female pupils.

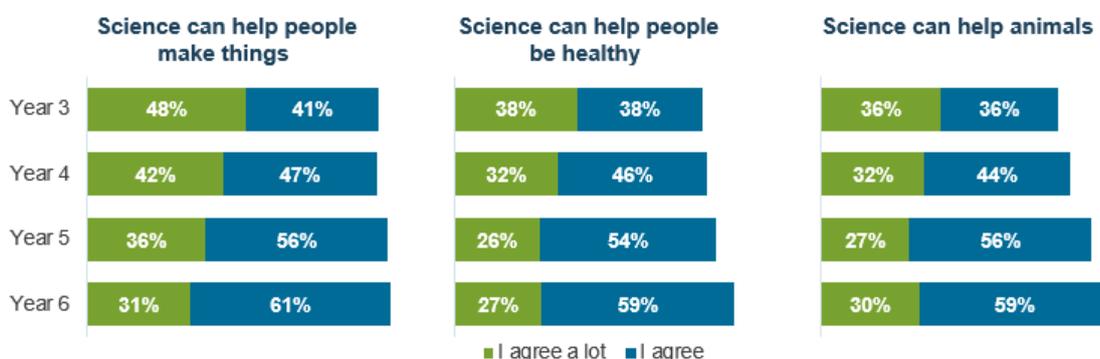
<sup>14</sup> This was only asked to those in Year 5 and 6.

**Figure 16: Extent to which pupils agree a lot with how science can help, by gender**



Differences across the statements were further explored by year group.<sup>15</sup> A higher proportion of pupils in Year 3 stated ‘a lot’ across statements compared to Year 5 and Year 6 (difference for ‘science can help animals’ not significant between Year 3 and Year 6). Although the proportion stating ‘a lot’ reduces as pupils get older, the combined response across ‘I agree a lot’ and ‘I agree’ increases. Year 6 show statistically significantly higher combined totals for ‘science can help people be healthy’ and ‘science can help animals’ compared with Year 3. This indicates that as pupils get older they may be more aware of how science can help.

**Figure 17: Extent to which pupils agree a lot or agree with how science can help, by year group<sup>16</sup>**

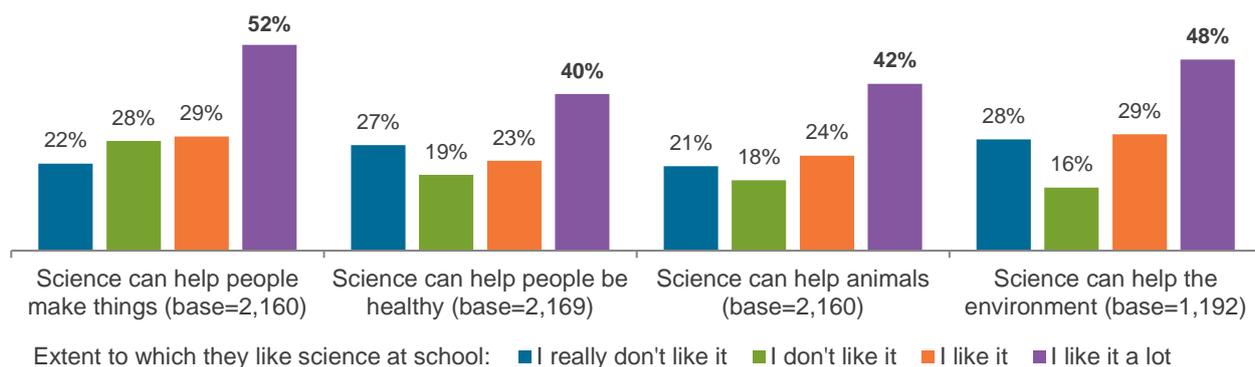


There were also differences by whether or not pupils liked science lessons at school. A higher proportion of pupils who stated ‘I like it a lot’ report more positive views of how science can help when compared to all other pupils (Figure 18).

<sup>15</sup> Science can help the environment was only asked to those in Year 5 and 6.

<sup>16</sup> For the category ‘I agree a lot’ there was a statistically significant difference for all statements: Year 3 compared with Year 5, for ‘science can help people make things’ and ‘science can help people be healthy’ Year 3 compared with Year 6. For the combine category ‘I agree a lot’ and ‘I agree’ there was a statistically significant difference for the statements ‘science can help people be healthy’ and ‘science can help animals’ for Year 6 compared with Year 3, 4 and 5.

**Figure 18: Extent to which pupils agree a lot with how science can help, by 'whether or not they like science at school'<sup>17</sup>**



## Employment

Just under two-fifths (38%) of pupils 'agree a lot' (13%) or 'agree' (25%) with the statement 'I would like to have a job that uses science' (only asked to those in Year 5 and 6). A higher proportion of males 'agree a lot' (15%) to this compared to 11% of females that when they grow up they would like a job that uses science.

Pupils were asked to state what job they would like when they grow up. Just over one-quarter of pupils (29%) report a science-related job with a slightly higher proportion of female pupils (32%) than male pupils (26%) indicating this. The type of job greatly differed by gender; for example, a higher proportion of male pupils want a job in engineering (or a related industry) or as a 'scientist' whereas female pupils are more likely to state they wish to be a vet (or another job related to animals) or pursue a career in healthcare/medicine.

**Table 2: Science related job reported by pupils**

| Science job               | Males | Females |
|---------------------------|-------|---------|
| Vet/animal related        | 20%   | 40%     |
| Engineering               | 27%   | 3%      |
| Healthcare/medical        | 9%    | 37%     |
| Scientist/science related | 44%   | 20%     |
| Base                      | 179   | 195     |

- 'Finding new species of animals and sea life'
- 'I would like to be an astronomer'
- 'Either a professional footballer or engineer'
- 'I would like to be a scientist and help people'
- 'I would like to have a job in forensics'
- 'I would love to be a chemist mixing elements'
- 'I want to help people and be a diabetic nurse'
- 'Aircraft engineer in the Navy'
- 'Cancer research scientist'
- 'Be someone who helps other people or animals'

Two-thirds of pupils (67%) who agree 'a lot' that they want a job that uses science when they grow up report a science related job. In addition, just under one-fifth (17%) of pupils who 'disagree' or 'disagree a lot' that they would like to have a science-related job went on to report a science related job such as Vet/other animal related job, or healthcare/medical.

<sup>17</sup> For the category 'I agree a lot' there was a statistically significant difference for all statements: 'I like it a lot' compared with 'I don't like it' and 'I like it'. For 'science can help people make things' and 'science can help animals' there was a difference for 'I like it a lot' compared with 'I really don't like it'.

## APPENDIX 1: PUPIL CHARACTERISTICS

### Country

|                  | Number | Percentage |
|------------------|--------|------------|
| England          | 1,655  | 68%        |
| Wales            | 294    | 12%        |
| Scotland         | 73     | 3%         |
| Northern Ireland | 292    | 12%        |
| Unknown          | 130    | 5%         |

### Gender

|         | Number | Percentage |
|---------|--------|------------|
| Male    | 1,239  | 51         |
| Female  | 1,193  | 49         |
| Unknown | 12     | <1%        |

### Age

|              | Number | Percentage |
|--------------|--------|------------|
| 7 years old  | 242    | 10%        |
| 8 years old  | 535    | 22%        |
| 9 years old  | 585    | 24%        |
| 10 years old | 675    | 28%        |
| 11 years old | 398    | 16%        |
| Unknown      | 9      | <1%        |

### School year

|         | Number | Percentage |
|---------|--------|------------|
| Year 3  | 505    | 21%        |
| Year 4  | 505    | 21%        |
| Year 5  | 642    | 26%        |
| Year 6  | 691    | 28%        |
| Unknown | 101    | 4%         |

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**Wellcome exists to improve health for everyone by helping great ideas to thrive. We're a global charitable foundation, both politically and financially independent. We support scientists and researchers, take on big problems, fuel imaginations and spark debate.**

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