School Implementation Fund (SIF): **Impact Report**

The Association of Science
Inclusion Team

August 2024

Contents

1. Funding and Application

1.1 Introduction to the Funding

The DfE provided The Association of Science Education with funding to carry out the 'Inclusion in Science' (IIS) programme for schools. During 2023-2024, funding was provided for two main branches of work.

The first branch of work was for 100 teachers of science from UK mainstream secondary schools to attend a CPD programme over the course of one year. This consisted of six to nine hours of CPD delivered over six to nine one-hour interactive CPD sessions to a live audience online. The 'Inclusion in Science' course intended learning outcomes may be found in Appendix 6.

The second part of the programme was for ASE to allocate to a selection of participating schools a 'School Implementation Fund' (SIF) of up to £1000 from the DfE. The grant was to support teachers in their schools to implement their learning from the course over a 12-week school implementation project, during the summer term of 2024. SIF could be used for teachers to implement their learning from the IIS programme to improve teaching or learning or provision for underserved students in science.

'Underserved students' is a term that ASE chose to describe students that may fall within any one or more of the following categories: FSM, Pupil Premium (PP), any ethnic group (including White British), EAL, gender, SEND, LGBTQ+, religion or belief, any protected characteristics, or any other student groups who may be vulnerable to falling behind in their science learning, or are at risk of making less progress than others. This definition of underserved students was shared with participating schools.

27 schools completed the whole process of making the applications, completing their SIF project, and reporting on impacts made to their school community.

1.2 Application Process for Schools

Teachers were asked to write a short application to explain how they would use the funding, this was only open to those who had fully completed the 'Inclusion in Science' CPD programme. The application required a 200-word description of the intended school-based project, including how the project would support underserved students in their school. Each application was reviewed by the IIS team for quality and to ensure the aims of the project met the criteria stipulated. The school could use the funding to buy teacher planning time (cover-supply), resources for improving the planning or teaching of science lessons, or for providing students with STEM enrichment or enhancement experiences. Teachers were asked to consider whether they were expecting beneficial impacts to emerge either for teachers, for the science department, or for the underserved students in their school, or any combination of these. It was recognized that any beneficial impact on students could realistically take more than 12 weeks (about 3 months) to manifest over time, and so the project might initially only make a positive impact on teaching staff at first. However, applicants had to explain how their project would impact underserved students in the short or long-term and how the school would continue supporting those students beyond the project's life.

1.3 Impact Bullet Codes

Teachers were provided with a list of 'Impact Bullet Codes' to help them to identify their intended beneficial impacts (see Appendix 1), which they had to include in their application. Appendix 1 shows the impact bullet codes that were created by the ASE inclusion team, drawing from ideas from a range of sources, including those used by STEM Learning as part of the DfE funded 'Triple Science Support Programme'. Each statement is designed to identify a specific impact that schools could readily measure, with each measure being a positive contributor towards learning gains for underserved students either directly (e.g. via running targeted STEM learning experiences) or indirectly (through improved teaching and teaching provision of science). To help schools to identify and measure whether impact could be gained, schools were also provided with a list of different types of evidence that they could potentially draw upon (see Appendix 2). However, schools would not be limited to using those. Impact codes were split into three categories:

- Impact on the lead teacher
- Impact on the science department
- Impact on underserved students

2. Support Provided to Schools During Application Process

2.1 Overview of support provided

In recognition of the pressures on teacher time and workload, ASE provided guidance to support high-quality applications and resources needed to plan and carry out their funded project if their application was approved. The support could be grouped under four categories:

- A Padlet page full of resources shared with schools, including an 'Ideas Bank'
- Optional SIF application workshops run by the ASE inclusion team online
- Regular reminders and additional 1-to-1 information-sharing where needed
- Light-touch formative feedback provided on school applications

2.2 SIF Padlet

A Padlet page was produced and shared with schools (Sample of Padlet Resources). The resource contained information that schools would need to do the following:

- gain ideas and suggestions for how they can productively use the grant,
- make a high-quality plan for their project, including identifying the main aims for beneficial impact on staff and on underserved students,
- create a high-quality application,
- ensure that they have identified evidence that can be collected to ensure that they are on track to make the intended beneficial impact

Shown below are some of the resources from the Padlet explained in more detail.

- A basic booklet with the key information: Information booklet
- Project Timeline: Timeline
- **Ideas bank:** A major resource in which ideas for SIF projects were provided with breakdown of how the grant funding could be spent in each idea: Ideas Bank
- Information about the impact bullets under the three categories, and types of evidence that could be gathered: Impact and Evidence
- A planning template was created, based on guidance from the Education Endowment Foundation*, showing short term planning, as well as planning for outcomes beyond the life of the project: Planning the project
- Examples of filled in planning templates using three different fictional schools:
    - School 1: Johnstone's triangle
    - School 2: Formative assessment for early intervention
    - School 3: Student STEM experience
- Examples of filled in application forms, corresponding to the three schools:
    - School 1: Johnstone's triangle
    - School 2: Formative assessment for early intervention
    - School 3: Student STEM experience
- Example sources for externally provided student STEM experiences:
    - Neon Engineering and STEM: Neon engineering and STEM
    - Youth STEMM award: Youth STEMM award
    - CREST awards: CREST awards

** Guidance on implementation from Education Endowment Foundation: EEF Guide*

2.3 SIF Workshops

Participants were given multiple opportunities to attend optional SIF workshop twilight sessions in which teacher's queries and concerns were addressed, and all SIF Padlet resources and expectations for the project were shared.

2.4 Regular reminders and additional support

The last few CPD sessions from the INSET programme was used to issue timely reminders about the funding opportunity, upcoming SIF workshops, application deadline, and resources available through the SIF Padlet to support planning, application process, and delivery of the SIF projects. In addition, optional additional 'add-on' sessions were run after the main CPD sessions to address some participants queries (including 1-to-1 sessions). These were run in addition to the formally scheduled workshops based on interest expressed by schools.

2.5 Light-touch formative feedback on applications

About half of the schools who had made successful bids had been provided with light touch formative feedback on how to improve their application or planning to ensure that impact could be made on underserved students. An example of formative feedback has been provided in Appendix 3a. Formative feedback was not consistently provided to all schools, as this was not the original purpose of assessing their applications. However, upon discussion with assessors at ASE Inclusion team, it was agreed that some supportive feedback provided at the discretion of each assessor could help to raise the likelihood of schools delivering successful impacts to their school community through their SIF project.

3. Impact Reported by Schools

3.1 Self-Reporting Process for School

After completion of their SIF projects, schools were asked to self-report the categories of impact that they believed their project had had on either the lead teacher, the science department, or on their target underserved students, from the impact bullet codes available in Appendix 1. In their original application form, schools were asked to identify at least three possible impact bullet codes. They could be from any of the three headings in any combination. Schools were asked to make an end-of-project report explaining any beneficial impacts made through the project, whether these matched up to their original application or not. They were also asked in their report to provide an 'impact statement' of about 300 words, explaining how their project had made a difference to their school community.

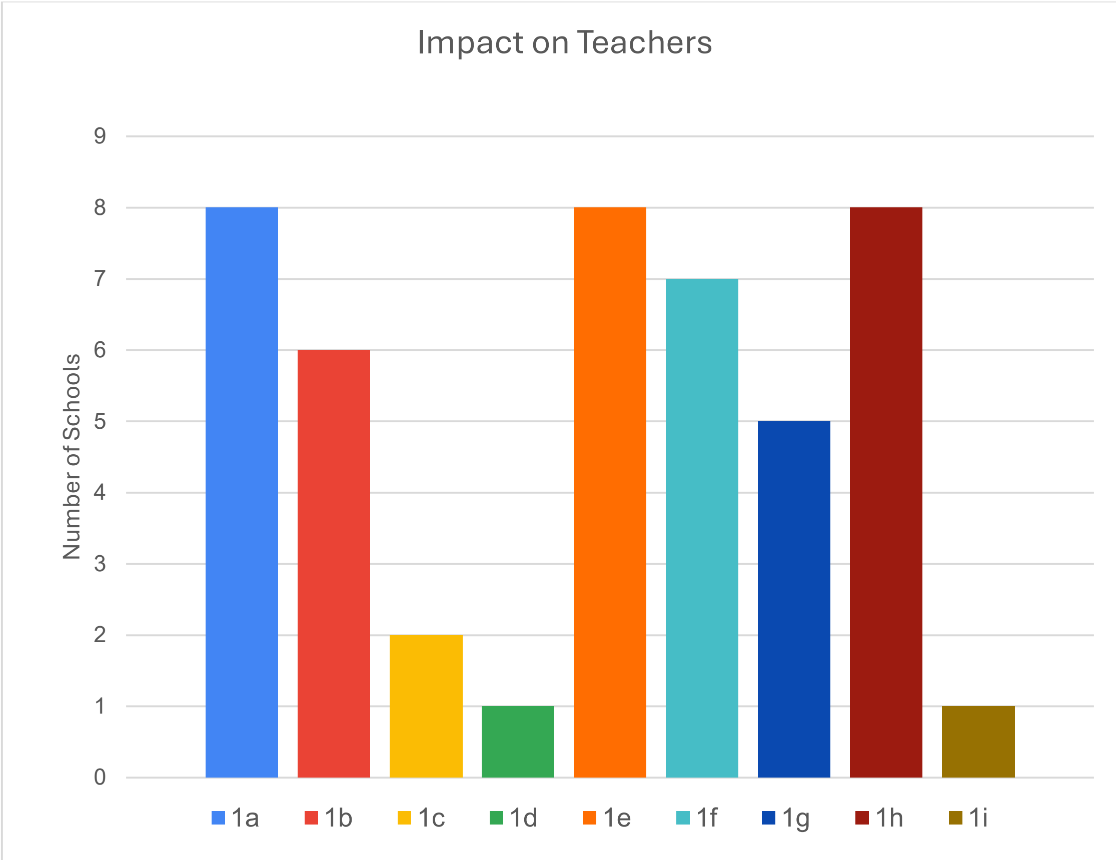
The three graphs in the following pages (Graphs 1-3), along with the data table in Appendix 4, show the overviews of what the schools had self-reported to ASE under the following three categories:

- Impact on teacher
- Impact on the science department
- Impact on underserved students

The raw data reported by schools may be viewed via Appendix 7.

3.2 Graph 1

3.2.1 Impact on the Lead Teacher – As Reported by 27 Schools

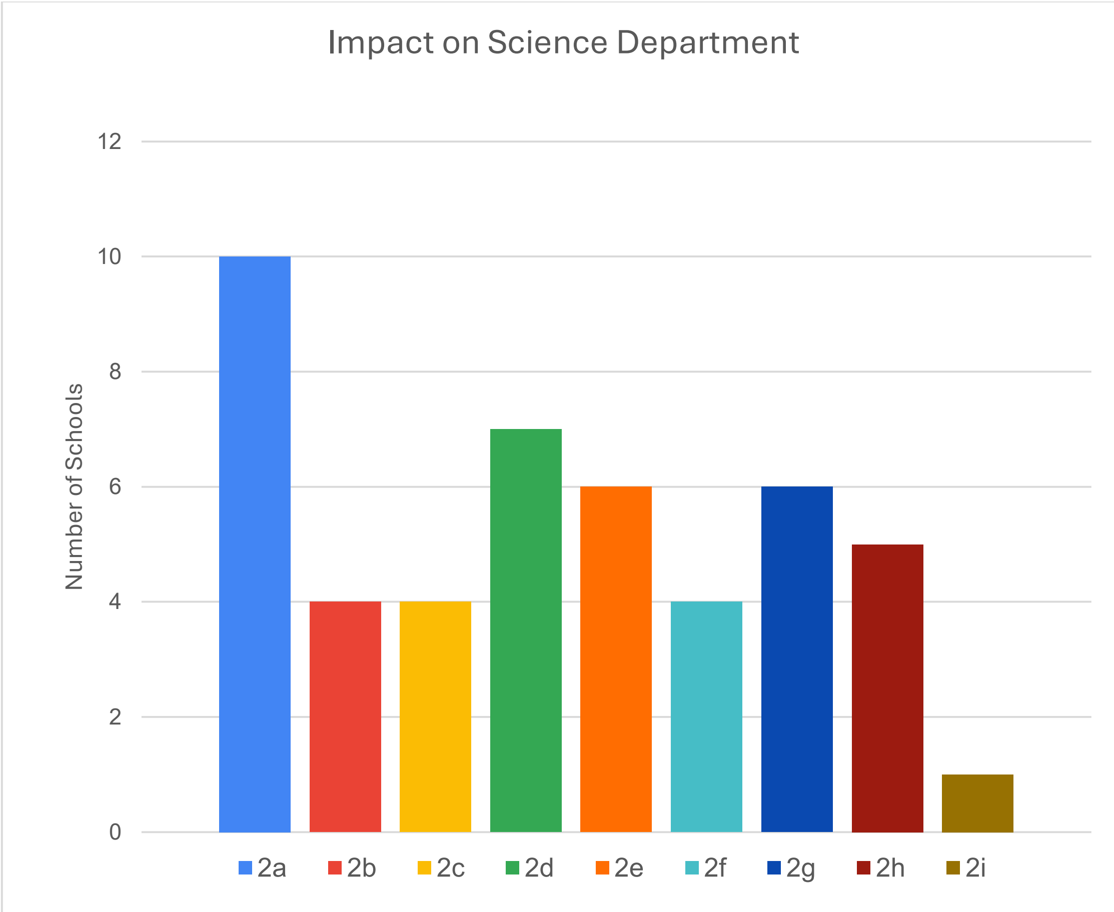


3.2.2 Impact Bullet Descriptions

Code	Description
1a	Improved enthusiasm and confidence for science
1b	Increased pedagogical knowledge, skills and understanding of curriculum / assessment / practical work with reference to inclusion
1c	Improved subject knowledge and understanding of areas of the science curriculum
1d	Better use of new subject and pedagogy knowledge, skills and understanding
1e	Improved knowledge and skills in leadership and management of science teaching with reference to inclusion
1f	Positive impact in overall classroom behaviour
1g	Improved skills for supporting practical work
1h	Increased awareness of STEM careers
1i	Reduced workload, improved wellbeing

3.3 Graph 2

3.3.1 Impact on Science Department – As Reported by 27 Schools

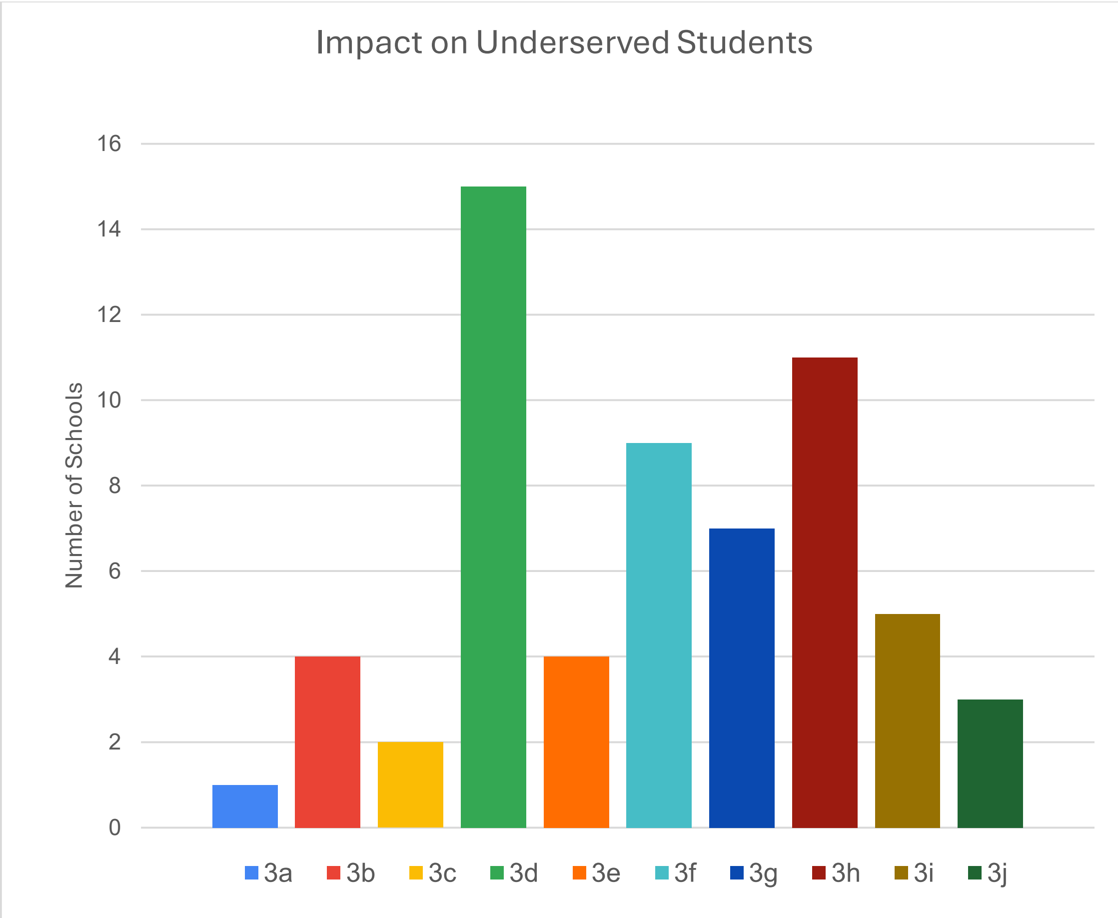


3.3.2 Impact Bullet Descriptions

Code	Description
2a	Improved quality of teaching science with reference to inclusion
2b	Improved leadership of science curriculum
2c	Increased progress and attainment of underserved pupils in science
2d	Increased profile/priority of science in school
2e	Improved sharing/dissemination of effective practice and resources
2f	Increased number of students considering studying Science at post-16 from underserved pupils
2g	Improvement in classroom behaviour
2h	Increased awareness of STEM careers
2i	Increased support from/to colleagues in other department(s)

3.4 Graph 3

3.4.1 Impact on Underserved Students – As Reported by 27 Schools



3.4.2 Impact Bullet Descriptions

Code	Description
3a	Improved students' attainment in science knowledge, skills and/or understanding
3b	Improved students' progress in science knowledge, skills and/or understanding
3c	Better depth of knowledge
3d	Better confidence, motivation and engagement in science
3e	Improved behaviour and safe working
3f	Improved engagement in science
3g	Improved engagement in science practicals
3h	Increased awareness of STEM careers
3i	Increased ownership of learning (such as self-regulation and metacognition)
3j	Increased skills in collaborative learning

3.5 Commentary on Schools’ Self-Reported Findings

27 schools provided us with an ‘Impact Report’ after completion of their SIF project, describing what impact the project had made on their school community and how they knew this. They were not expected to report on whether they had met the impact bullets that they had originally written in their application forms, but rather what real-world impact had taken place now that the projects were complete. They each identified at least three impacts from our impact bullet codes, which is what had been set as the minimum expectation. They also provided ASE with a written report of around 300 words explaining how their project had a beneficial impact on staff and/or underserved students. Data overviews are shown in the two tables below.

3.5.1 Data Table – Overview of Impacts Reported by Schools

	Impact on teachers	Impact on science department	Impact on underserved students	Total for all schools
Minimum expected impact	Schools had to choose at least three impact codes, which could be in any combination under the three main categories.			81
				3 (average)
Impact identified by schools	46	47	61	154
	1.7 (average)	1.7 (average)	2.2 (average)	5.7 (average)

3.5.2 Data Table – The Most Selected Codes (from 28 Total) in Rank Order

Code	Description	How many schools selected this code
3d	Underserved students: better confidence, motivation and engagement in science	15
3h	Underserved students: increased awareness of STEM careers	11
2a	Science department: improved quality of teaching science with reference to inclusion	10
3f	Underserved students: improved engagement in science	9
1a	Teacher: improved enthusiasm and confidence for science	8
1e	Teacher: improved knowledge and skills in leadership and management of science teaching with reference to inclusion	8
1h	Teacher: increased awareness of STEM careers	8

3.5.3 Key findings from schools' self-reported data

- All 27 schools had reported a minimum of 3 impacts per school or more, with some schools reporting as many as 20 impacts out of the 28 available in total
- Every impact bullet code was selected by at least one school
- **154 impacts were reported in total, an average of 5.7 impacts per school, exceeding the minimum expectation of 3 impacts per school by 90%**
- The top four reported impacts in rank order were:
  - Underserved students: better confidence, motivation and engagement in science
  - Underserved students: increased awareness of STEM careers
  - Science department: improved quality of teaching science with reference to inclusion
  - Underserved students: improved engagement in science
- Regarding impact on the lead teacher, the top three were:
  - Improved enthusiasm and confidence for science
  - Improved knowledge and skills in leadership and management of science teaching with reference to inclusion
  - Increased awareness of STEM careers

Schools had been provided with the option of reporting on 'other' impacts not listed in the codes, which they could self-describe if selected. However, no schools selected this option. Graphs 1-3 and the Data Table (Appendix 4) show that there was uneven spreading of impacts across the three categories under the bullet codes.

Data about how many students and staff have been impacted by the projects has been incorporated into the next section.

4. Verified and Adjusted Impact

For the next stage of data analysis, only verified and adjusted impacts were used.

4.1 Data Verification Process

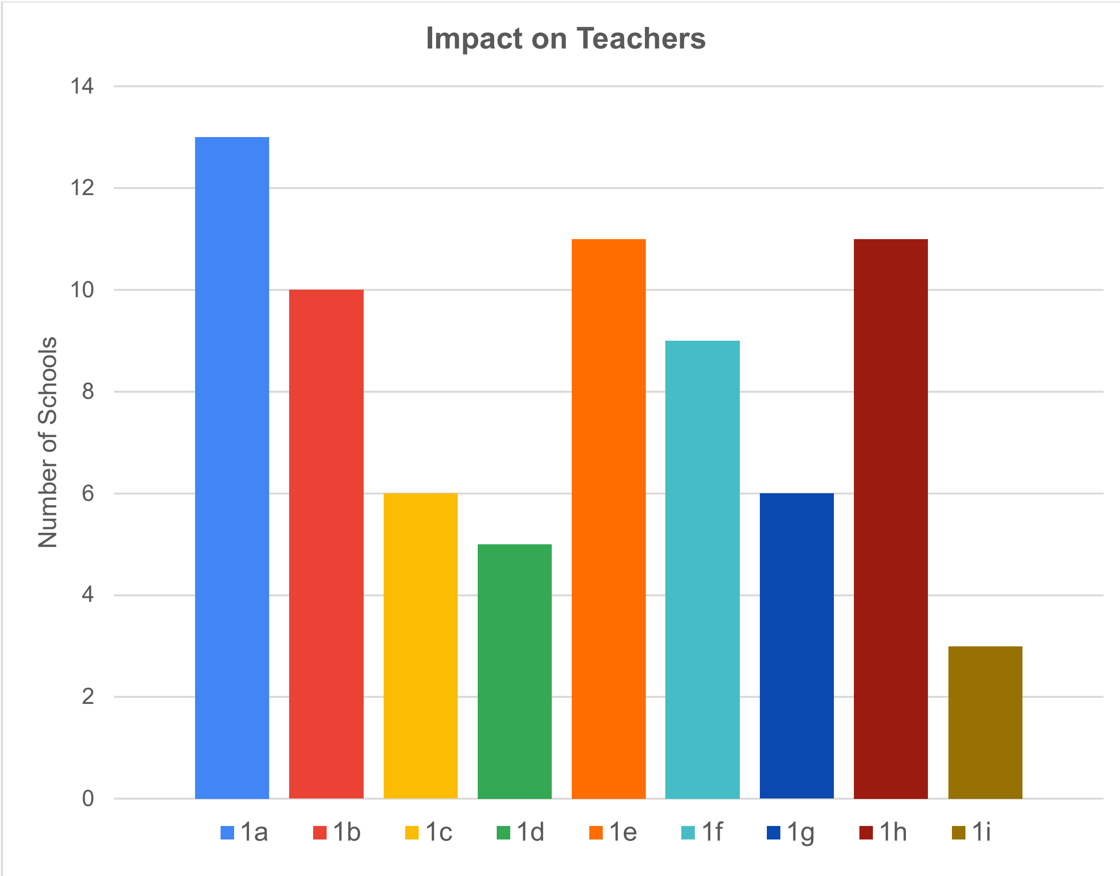
In addition to providing self-reported impact codes, project leaders provided a written statement explaining how their project had made impact upon their school community, as well as how they knew this from their evidence. Examples of evidence that the school could draw upon were provided by ASE (see Appendix 2). We choose not to directly collect evidence of impact from schools (such as staff/student survey findings) to reduce the workload on school staff. Instead, schools were asked to only describe the types of evidence that they had used to draw conclusions from. ASE verified the likelihood of impacts being real, by cross-checking the school's written statement against their reported impact; as well as by cross-checking against their original application. A small number of schools (two) were deemed to have mis-identified the real impacts that they had made in their respective schools and had not made all the impacts that they had claimed to make. Both schools had made impacts in other ways however (see next section on 'Data Adjustment Process' for an explanation), and so had still met the minimum requirements of the SIF programme. Impacts that could not be verified were dropped from the totals and were not used in the next stage of data analysis.

4.2 Data Adjustment Process

To better understand the true impacts made upon the 27 school communities, ASE independently identified which impact codes had been met, by drawing from the school's 300-word written impact statement as evidence, as well as by drawing from the original application form where needed. An example of the process has been shown in Appendix 3b. Most schools seemed to have been overly conservative in reporting impacts i.e. they had under-reported which impacts had been met, despite their written statements indicating a higher number of impacts. 96 additional impacts were identified by ASE, and the data going forwards was adjusted according to this. For the next stage of analysis, verified and adjusted data only were used. The three graphs in the following pages (Graphs 4-6), along with the data table in Appendix 5, show the verified and adjusted impacts under the three categories as previously used.

4.3 Graph 4

4.3.1 Verified and Adjusted Impact on the Lead Teacher

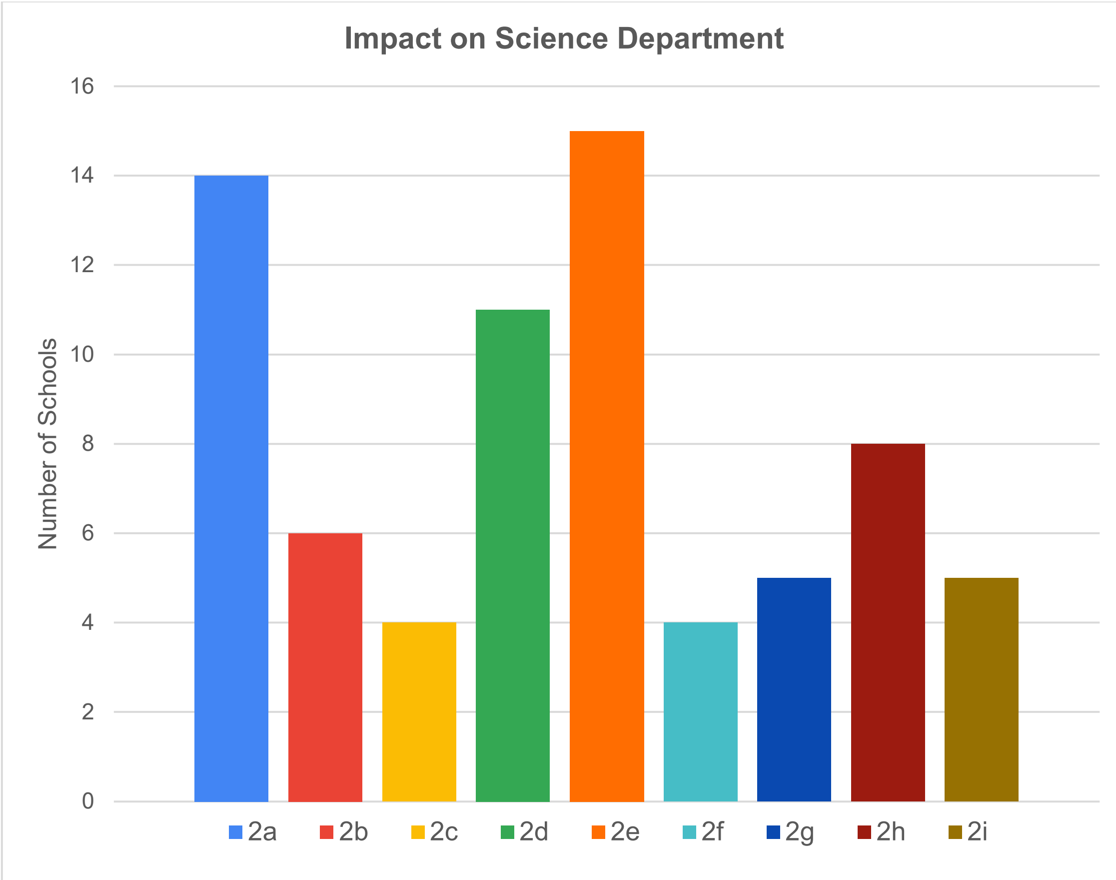


4.3.2 Impact Bullet Descriptions

Code	Description
1a	Improved enthusiasm and confidence for science
1b	Increased pedagogical knowledge, skills and understanding of curriculum / assessment / practical work with reference to inclusion
1c	Improved subject knowledge and understanding of areas of the science curriculum
1d	Better use of new subject and pedagogy knowledge, skills and understanding
1e	Improved knowledge and skills in leadership and management of science teaching with reference to inclusion
1f	Positive impact in overall classroom behaviour
1g	Improved skills for supporting practical work
1h	Increased awareness of STEM careers
1i	Reduced workload, improved wellbeing

4.4 Graph 5

4.4.1 Verified and Adjusted Impact on Science Department

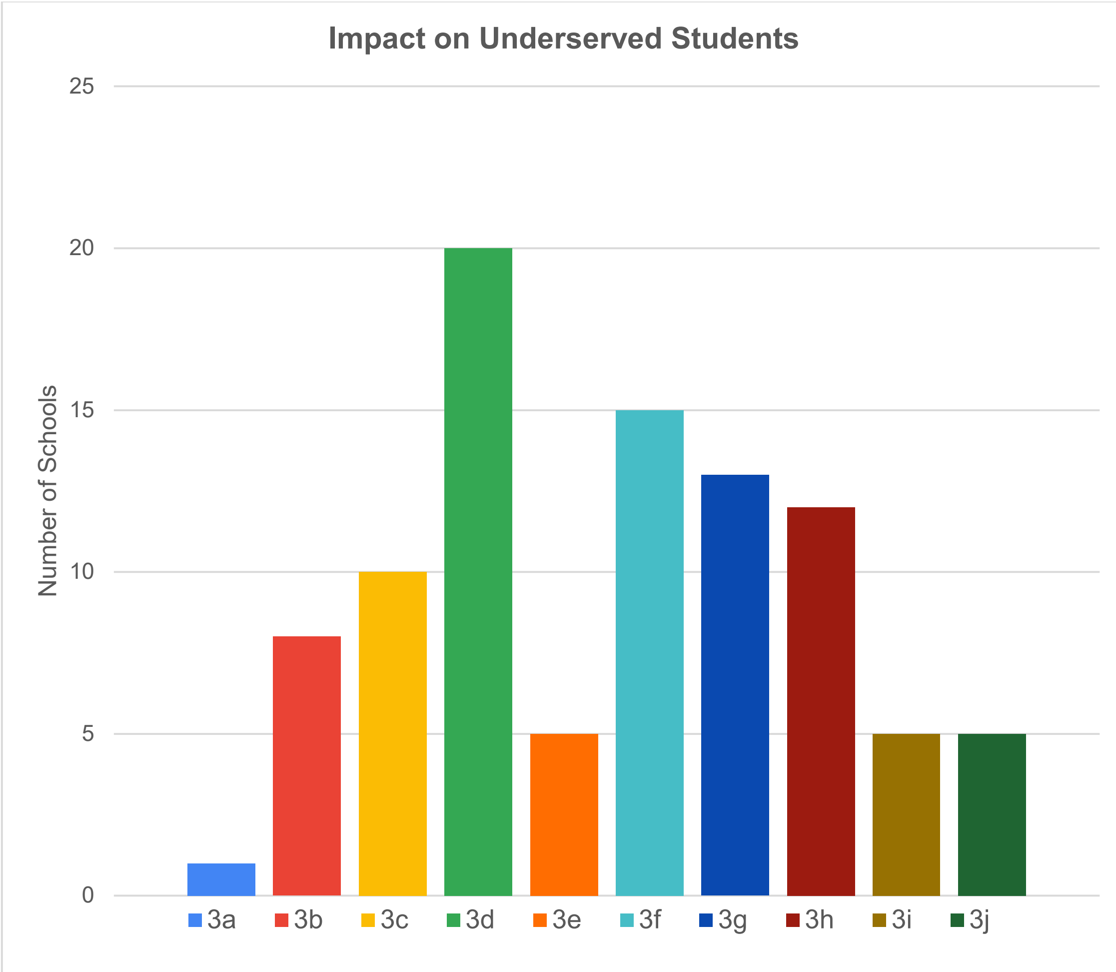


4.4.2 Impact Bullet Descriptions

Code	Description
2a	Improved quality of teaching science with reference to inclusion
2b	Improved leadership of science curriculum
2c	Increased progress and attainment of underserved pupils in science
2d	Increased profile/priority of science in school
2e	Improved sharing/dissemination of effective practice and resources
2f	Increased number of students considering studying Science at post-16 from underserved pupils
2g	Improvement in classroom behaviour
2h	Increased awareness of STEM careers
2i	Increased support from/to colleagues in other department(s)

4.5 Graph 6

4.5.1 Verified and Adjusted Impact on Underserved Students



4.5.2 Impact Bullet Descriptions

Code	Description
3a	Improved students' attainment in science knowledge, skills and/or understanding
3b	Improved students' progress in science knowledge, skills and/or understanding
3c	Better depth of knowledge
3d	Better confidence, motivation and engagement in science
3e	Improved behaviour and safe working
3f	Improved engagement in science
3g	Improved engagement in science practicals
3h	Increased awareness of STEM careers
3i	Increased ownership of learning (such as self-regulation and metacognition)
3j	Increased skills in collaborative learning

4.6 Commentary on Verified and Adjusted Impact Findings

Raw, verified and adjusted data for each school may be viewed via Appendix 7.

Data overviews are shown in the two tables below.

4.6.1 Data Table – Overview of Verified and Adjusted Impacts

	Impact on teachers	Impact on science department	Impact on underserved students	Total for all schools
Total verified and adjusted impacts	74	72	94	240
	2.7 (average)	2.7 (average)	3.4 (average)	8.8 (average)
Compared to impacts identified by school	+28 (+ 61%)	+25 (+53%)	+43 (+70%)	+96 (+62%)
Compared to the ‘minimum expected impact’.				+159 (+196%)

4.6.2 Data Table – Most Common Impact Bullets in Rank Order

Code	Description	How many schools made this impact
3d	Underserved students: better confidence, motivation and engagement in science	20*
3f	Underserved students: improved engagement in science	15*
2e	Science department: improved sharing / dissemination of effective practice and resources.	15*
2a	Science department: improved quality of teaching science with reference to inclusion	14*
1a	Teacher: improved enthusiasm and confidence for science	13
3g	Underserved students: improved engagement in science practicals	13
3h	Underserved students: increased awareness of STEM careers	12

**Represents more than half of the 27 participating schools*

4.6.3 Key findings from verified and adjusted impact data

- All 27 schools made at **least 3 impacts per school or more**, with some making up to 23 out of the 28 possible impacts available
- **240 impacts occurred in total, an average of 8.8 impacts per school**
- After verification and adjustments, schools had made **62% greater impact than had previously been self-reported by the schools**. This corresponded to **196% greater impact than the minimum expectation** (almost 3-fold more) than was set as the minimum aim for each school
- The top seven reported impacts in rank order were, **3d**, **3f, 2e, 2a, 1a, 3g,** and **3h**, out of which the top 4 was achieved by more than half of the participating schools (14-20 schools)
- Approximately **223 science teachers** and **9649* underserved** students had been positively impacted on by all the SIF projects, which we believe represents good value for the money granted to schools (£27,000 to 27 schools)

*The figure for underserved students who gained from the project is an extremely conservative estimate made by ASE. The true impact is likely to be much higher when long-term impacts beyond the life of the project is factored in. Schools were asked to report on how many students had been positively impacted on through the project, and most reported considerably higher figures than mentioned above (data not shown). However, many schools did not distinguish between students that had already gained positively during the 12-weeks project period, and those that would gain over the next academic year or projected further beyond, with some schools using such wording as *'all students in the school'* in their impact reports. Where this was the case, the number for students realistically gaining impact was deduced by finding out how many students in the whole school, and then extracting the number from one year-group only, since most schools had targeted one year group for their project in the short-term.

The most frequently under-reported impact code which benefited the most from our adjustment process was **2e** (Science department; improved sharing/dissemination of effective practice and resources), followed by **3c** (underserved students: better depth of knowledge), then **3f** (underserved students: improved engagement in science), and lastly **3g** (underserved students: improved engagement in science practicals).

Only one school had improved in **3a** ('Improved students' attainment in science knowledge, skills and/or understanding'), which was evidenced through the students improved end-of-unit test scores, compared to their previous cohorts scores for the same test. During the school support period prior to writing applications, schools had been advised against expecting 'student attainment' to jump up highly in12 weeks, as typically this would require more time to unfold. We advised them instead to look for other more realistic signs that students were now learning better in the short-term (see Impact Codes **3b, 3c, 3d, 3e, 3f, 3g, 3i, 3j**).

Others who gained beneficial impact, as reported by schools included:

- 25 science teaching assistants
- 1 member of SLT
- 1 careers leader

– 10 parents/guardians

5. Range of SIF Projects

There were a wide range of project ideas generated by schools, which was influenced by the 'Ideas Bank' that was shared by ASE with schools. In general, the types of projects that schools created were under these categories:

- Cascading CPD learning from the 'Inclusion in Science' programme to other teachers in the science department, using resources provided by ASE
- Improving lesson plans and schemes of learning at science department level to make them more inclusive for underserved students
- Improving the teaching or school environment to make them more welcoming for underserved students
- In-depth self-reflection or peer-assessment exercises looking at the quality of teacher-student interactions and/or quality of teaching underserved students
- Organising STEM learning enhancement or enrichment experiences for underserved students, either inside or outside of the school

Just under half of all schools ran multi-part projects that served more than one of the areas described above. For example, several schools ran a three-part project:

1. Cascade learning from the lead teacher to the whole science department
2. Science team uses their new learning to make agreed improvements to the science scheme of learning, and then deliver the improved lessons
3. Science team evaluates how well the improved lessons performed for example through peer-evaluation or pupil voice surveys

Schools used their £1000 grant in a variety of ways, which may be categorised under the following groups:

- Time (cover-supply) for teachers to carry out planning work or deep-learning activities (such as peer-assessment of lessons)
- Buying resources for the school (e.g. Molymod kits for Chemistry) to increase student participation in practical learning.
- Buying student STEM experiences from external sources including planning for bringing this learning into ongoing lessons to benefit more students.
- Buying resources for internal use to remove barriers to students accessing STEM activities (e.g. healthy snacks for STEM club attendees)

Some interesting school case studies have been discussed in the next section 'Factors Influencing SIF Project Outcomes'. One full case study has been shown in Appendix 8.

6. Factors Influencing SIF Project Outcomes

We believe that, in general, schools produced high quality applications, had carried out their projects authentically, and had made good quality impact reports. We believe that these successes were influenced heavily by two factors:

- Good quality of learning from the 6-part 'Inclusion in Science' CPD programme
- Good support provided by ASE to schools prior to applying for the grant

6.1 Inclusion in Science 6-Part CPD Programme

The programme was written and designed by making use of guidance provided by the Education Endowment Foundation on the 14 mechanisms that make up effective professional development (EEF Effective PD). The ASE inclusion team ensured that the CPD was relevant, up-to-date, highly engaging and interactive, and would activate deep-thinking and deep reflection for all participants. The course was supplemented with workbooks, resource repositories, gap-tasks, community learning opportunities, and optional 1-to-1 support from course leaders. Consequently, all 6 courses and 3 optional seminars were very rated well by participants (data reported elsewhere). It was the ASE course delivery team's experience that, in general, most teachers were authentically engaged and invested in learning well whilst on the course.

The 18 intended learning outcomes (ILOs) from the 6-part 'Inclusion in Science' CPD programme are shown in Appendix 6. When reviewing schools' project plans in their initial application forms and their 300-word impact statements, it was possible to detect the influence of all 18 ILOs on their planning and delivery of their SIF projects. However, an exhaustive mapping exercise has not been carried out to verify this.

There were 3 additional seminars which were not compulsory for teachers to attend. It was possible to see how learning from the additional units had also played an important part for some schools in their SIF work. Most SIF project leaders drew ideas from their learning from more than one module, with examples shown below.

6.1.1 Modules 1 and 2 (and Seminar 1)

These units, covering 'Introduction to Inclusion' and 'Exploring Bias', formed the foundational knowledge upon which the rest of the course was built. It was possible to see how learning from these units has permeated into all 27 SIF projects. Project leaders were, in general, very ambitious and enthusiastic about how their work would make a real difference to underserved students. Themes around addressing unconscious bias of teachers and students and addressing inequalities ran through all projects, as would be expected.

Case studies: unconscious bias

Several schools ran multi-part SIF projects, where the work began by cascading ASE's training on unconscious bias to their whole science department.

6.1.2 Module 3 and Seminar 2 (Inclusive language)

Module 3 was about ‘Inclusive Language’. Seminar 2 extended on the inclusive language theme and included discussion for heads of science about improving student behaviour management through fair and inclusive methods to help build positive relationships between students and their teachers.

Case study: behaviour and language

One school with widespread student behaviour issues wished to cascade ASE’s behaviour for learning training and resources provided to others in science, as well as training around using positive language and formative dialogue to motivate and guide students. This school managed to improve the way that science lessons began. The improvements were high enough that the school’s visiting School Improvement Advisor noted that the beginnings of science lessons were better and calmer when compared to before the project, and they praised the science department for their work through the SIF project. These gains should ultimately benefit all students in the school.

6.1.3 Module 4, Seminar 2 and Seminar 3 (Pedagogy)

Module 4 was about ‘Inclusive Practice in the Classroom’ and covered how science teaching pedagogy was linked to inclusion. Seminar 2 extended on the themes covered in Modules 3 and 4. Seminar 3 looked at the learning impact of science practicals as part of what was covered. Several schools planned their project around making pedagogical improvements to science lessons and/or science practicals that would support teachers in narrowing gaps in science learning progression.

Case studies: Johnstone’s triangle

Several schools wished to incorporate the use of 'Johnstone's triangle' in lesson planning to support them in making abstract science more accessible and concrete for learners. Johnstone's triangle is a teaching technique that was covered in Module 3, in which practical science observations (concrete learning) are immediately linked to chemical word equations and chemical symbol equations (abstract learning), as well as 2D/3D models of atoms to support visualization of what is happening at the atomic level. Whilst this technique will be good for all learners, it makes more of a difference to those who struggle more than others to link their concrete observations in practical science with the abstract science happening at the atomic level. Sometimes these are students with learning needs, or those who have previously made less learning progress (often disadvantaged students). All schools who engaged with this had reported overwhelmingly positive outcomes, including one school who reported a 'significant impact on the students' understanding of ‘Required Practicals for GCSE chemistry'. Several of these schools had collected survey data from both staff and students, and most will be cascading the same process of improvement to other science learning units over time.

Case studies: Other pedagogical improvements

Several schools mentioned how through cascading of CPD to staff, they now had a better understanding of how simple everyday classroom pedagogical techniques was linked to inclusion, and how their absence could disproportionately disadvantage some students more than others. Whilst some schools had a SIF project focusing on improving pedagogy, other schools reported improved pedagogy as an additional benefit emerging from the work that they carried out in which the focus had been elsewhere. A few selected examples of improved pedagogies include the following:

- Even-handed cold calling (instead of expecting students to 'opt-in' to being questioned by raising their hands, therefore leaving others to 'opt-out')
- Formative questioning to facilitate early in-class interventions
- Using the PEOE questioning technique (predict, explain, observe, explain)
- Better everyday use of mini whiteboards for SEND students and EAL students
- Better access to videos to repeat the demonstration of science practicals
- Keywords being used more explicitly in everyday lessons, and online multi-lingual dictionaries being made available more readily

Case studies: Improved practical sciences

Where practical apparatus was being purchased with the grant, we asked schools to explain specifically how the apparatus would support the learning of underserved students. Schools made strong links between pedagogy and the expected impact on their underserved students. For example, one school purchased dataloggers, pH probes and light gates, and linked this to the use of micro-practicals for some student groups to aid their numeracy and understanding of science for those who usually make less progress (pupil premium). Another school bought jumbo-sized timers and meat thermometers (which have bigger displays than normal thermometers), to support visually impaired students, and those with limited dexterity in their hands. One school wished to create solo trays for science practicals to support students who are studying science at Entry Level, as well as those on the autism spectrum who were less comfortable working collaboratively in a group.

One school used some of their funding to better label the component parts of physics practical apparatus, and to make keyword posters, to support their EAL learners, and reported huge gains in enthusiasm by both teachers and students.

6.1.4 Module 5 and Module 6

Module 5 was about 'Inclusion in the Science Curriculum', covering decolonisation and diversification of the science curriculum. Module 6 covered 'Encouraging young people to take science further', which looked at how careers awareness impacted on inclusion. Decolonising and/or diversifying the curriculum was the focus for several schools' projects, who took the bulk of their inspiration from Module 5 learning. Many schools had some aspects of diversifying their science curriculum as part of a bigger project with several different topics of focus. Increasing awareness of diverse careers in STEM formed the focus for at least 5 school's SIF projects. Several other schools also had a career-awareness component to their project. All these projects used tools, resources, and learning from Module 6.

Case studies: Schools organising STEM learning experiences

Where schools were using the funding to buy one-off STEM experiences for students, for example one school had a 'Medical Mavericks' drop-down careers fair, we asked them to show us how this will link to long-term plans beyond the funding, and how these would support underserved students in the long-term. In these cases, schools were able to show how they were thinking about the long-term embedding of the activity, by mapping against a five-year curriculum plan. These schools also showed ASE, the rationale as to how the experience would support underserved students - for example by showing them how they can get into a diverse range of lesser-known NHS careers, which do not require the top science GCSE grades to enter. In addition, the schools adjusted their normal science lessons, to make better links to the STEM experience (e.g. 'Medical Mavericks' careers fair experience was supplemented by incorporating a heart dissection in a biology lesson, linked to what surgeons may be doing in hospitals). This was done so that the STEM experience would not become a one-off isolated event, but rather it would become integrated into the whole 5-year learning experience making cross-links. The cross-linking and integration process was a topic covered in Module 6. After cross-linking and improved incorporation of STEM careers in lessons, one school reported that 49% of their Key Stage 3 students said ‘they often see examples in STEM lessons of how the things they are learning are used in business and industry’ compared to 39% from an earlier survey.

Case studies: Diversifying and decolonizing the science curriculum

Several schools wished to add better and more diverse careers references into a selection of teaching units, using diverse role models, thus drawing from both Modules 5 and 6. Whilst some schools made ‘diversification and decolonizing the science curriculum’ their main focus for their project, others were able to incorporate similar benefits on a smaller scale whilst doing other work.

6.2 Support provided to schools prior to applying for the grant

It was possible to connect the guidance that schools had received from ASE staff to the quality of their writing in applications and impact statements. The ‘Ideas Bank’ (Ideas Bank) in particular, appeared to have heavily influenced most schools, where it was clear to see that they had adapted ideas taken from the Ideas Bank to fit their school contexts. Examples are listed below where schools' projects were the same or similar to those from the ‘Ideas Bank’.

- Using Johnstone’s triangle to make chemistry less abstract (several schools)
- Improving quality of questioning in class (formative assessment) to identify early intervention opportunities (several schools)
- Decolonising or diversifying the curriculum (several schools)
- Organise student STEM experiences from ‘NEON’, ‘’ Youth STEMM awards’ or ‘Crest awards’ (several schools)
- Collaborating with primary feeder schools (1 school)
- Subscription to Proud Trust (Rainbow flag award) to raise profile of LGBTQ+ scientists in the curriculum, and to support LGBTQ+ students (1 school)
- Subscription to ‘Equaliteach Empowered Platform’, to empower the whole school, but lead by the science department (1 school)
- Run inclusive science clubs (several schools)

All these schools also had a good level of detail in the plans, making strong links to how the work would benefit underserved students. Their finance plan for how they would use the grant money was also mostly robust.

Positive cause-and-effect links could also be made to the support received through workshops, regular reminders about deadlines and resources, as well as light-touch formative feedback provided after applications were made.

Since schools offered no additional or ‘other’ impacts other than the ones that ASE had coded, and all impacts were used at least once, we believe that this is a good indicator that the design of the impact bullet codes was sufficiently broad and balanced enough to capture a useful range of positive contributors towards learning gains for underserved students.

Case studies: Purchasing subscriptions

One school wished to gain the 'Rainbow flag' award. The main work would start in September 2024 to coincide with the subscription that they had bought from ‘Proud’, and ASE gave the school permission to defer the main bulk of their work until then. Although we did request to see a breakdown of what they will do ahead of time, and how this will impact on both students in LGBTQ+ groups as well as others. We were satisfied that the school had a robust enough plan, which if implemented would impact on the whole school. Since the scale of the impact was projected, and had not yet taken place, the student and staff figures were not included in our adjusted data, although we did include the impact that was deemed to have already taken place within the 12-week project period, during which time the school had carried out their initial planning. A similar situation occurred with a school who purchased a year-long subscription from ‘Equaliteach’. However, that school were able to initiate considerable work within the school and started making impacts straight-away and within the 12-week period and will continue to use the subscription into next academic year.

Case studies: Student-to-student mentoring

Some schools set up student-to-student science mentoring. This ranged from KS3/4 students supporting KS2 students visiting from feeder primary schools; to older students who had gone through some STEM learning experience and were now mentoring younger students within the same school. In all cases, schools reported that both mentors and mentees had benefited from the set-up.

Case studies: Not just short-term planning

Most schools produced convincing ideas about how they will cascade their positive impacts so that these spread on to other science teaching units over time *after* the project support is over. The use of our tool for planning was evident (Planning template). About half of the schools described what they would do beyond the immediate project. For example, where schools had made improvements to schemes of work, they had made plans to continue this work but looking at other science teaching units. During our workshops, we advised schools to focus on making small but penetrative impacts, but also to plan for ongoing work beyond the short or medium term. We trained them with worked examples of action-plans during the workshops and included these as part of their support pack.

Case studies: Ensuring evidence of impact

Several schools carried out 'before' versus 'after' surveys either with staff and/or with students. Whilst some schools focused the surveys on groups of underserved students, others surveyed a whole year group. Where survey findings were shared with ASE, the 'after' data always showed an improvement of some sort, for example increased enjoyment of doing a STEM learning activity, increased awareness of STEM careers, or increased understanding by teachers of planning to teach more inclusively.

7. Project Design: Improvements for Future Work

In general, the design of the SIF project proved to yield highly successful results in schools for the £1000 cash grant that they each received. The following refinements could be made to any similar work carried out in future.

7.1 Impact Codes

The impact codes that ASE designed seemed to do a good job of identifying a wide range of beneficial gains that are relevant to improving inclusion in science. In future, these codes may be refined further after learning from the school's experiences of trying to match up what was achieved in school against the codes, as well as ASE's experiences of doing the same matching-up exercises. Some codes may potentially be combined with others or discarded where they are deemed to be similar or largely overlapping. Additional new codes could be incorporated to allow some of the 'softer' gains to be measured, for example, students having a greater sense of 'belonging' to their school community. Additional codes may be incorporated to better reflect the needs of students with SEND.

7.2 Formative feedback on school applications

It was not part of the original plan to provide schools with formative feedback on their funding application, and as such, the formative feedback that was given was not consistently applied across all schools. Where it is deemed that schools will receive formative feedback, the process should be made more consistent so that all schools gain the same advantage.

7.3 Gathering Data from Schools

To make data analysis easier for ASE, a numeric rating component may potentially be introduced, whereby school's rate their impact gain (for example out of 1-5) against where they were before the project commenced. ASE can also give better guidance on reporting on the numbers of students and staff that had been impacted, by distinguishing between those students and staff that had already gained a benefit in the short-term, those that will gain benefits within the medium term (2-3 terms), as well as those that will gain benefits over the longer term (1-5 years).

8. Summary of the Report

27 secondary schools who participated in the DfE-funded 'Inclusion in Science' CPD programme, which was run by The Association of Science Education, were awarded a £1000 grant from the DfE to implement some part of their CPD learning towards improving science learning by underserved students. With guidance provided, schools could choose what type of project they would run with the funding over 12 weeks. As part of their funding application, which was a semi-competitive process, schools were required to identify at least 3 intended impacts against 28 'Impact Codes' that were devised for this project (see Appendix 1). After running their projects, schools were asked to identify the actual impact made against the 28 available Impact Codes. This report analysed the impacts that the projects had made on, i) the lead teacher, ii) their science department, and iii) underserved students within their schools.

Our data analysis showed that:

- Approximately **223 science teachers** and **9649 underserved** students had been positively impacted by all the SIF projects, which we believe represented good value for the money granted to schools. £27,000 total was allocated across 27 schools at £1000 per school.
- All schools reported achieving a minimum of **3 impacts per school**, which was the minimum requirement. The average impact reported by schools was **5.7 per school**, which **exceeding the minimum expectation by 90%**
- After verification of data and data adjustment for under-reporting by schools, the average impact made rose to **8.8 impacts per school**, which **exceeding the minimum expectation by 196%**
- Collectively, positive impacts were made in all impact categories, although the distribution across the 28 Impact Codes was uneven. The top four types of impacts which were made by more than half of the participating schools in rank order were in the 'Impacts Codes' 3d, 3f, 2e, and 2a, as described below:
    - **3d:** Underserved students having better confidence, motivation and engagement in science
    - **3f:** Underserved students having improved engagement in science
    - **2e:** The science department having improved sharing / dissemination of effective practice and resources
    - **2a:** The science department having improved quality of teaching science with reference to inclusion

We believe that participating schools produced high quality applications and impact reports and had carried out their project authentically with proven successes. We believe that these successes were influenced positively by the lead teacher's learning from the 'Inclusion in Science' CPD programme, as well as by the different types of support that was provided by ASE to schools during the school's application process. An example case study with outcomes has been included in Appendix 8.

Appendix 1: Impact Bullet Codes

There are **28** Impact bullets in total.

Impact on Teacher		Impact on Science Department		Impact on Underserved Students	
1a	Improved enthusiasm and confidence for science	**2a**	Improved quality of teaching science with reference to inclusion	**3a**	Improved students' attainment in science knowledge, skills and/or understanding
1b	Increased pedagogical knowledge, skills and understanding of curriculum / assessment / practical work with reference to inclusion	**2b**	Improved leadership of science curriculum	**3b**	Improved students' progress in science knowledge, skills and/or understanding
1c	Improved subject knowledge and understanding of areas of the science curriculum	**2c**	Increased progress and attainment of underserved pupils in science	**3c**	Better depth of knowledge
1d	Better use of new subject and pedagogy knowledge, skills and understanding	**2d**	Increased profile/priority of science in school	**3d**	Better confidence, motivation and engagement in science
1e	Improved knowledge and skills in leadership and management of science teaching with reference to inclusion	**2e**	Improved sharing/dissemination of effective practice and resources	**3e**	Improved behaviour and safe working
1f	Positive impact in overall classroom behaviour	**2f**	Increased number of students considering studying Science at post-16 from underserved pupils	**3f**	Improved engagement in science
1g	Improved skills for supporting practical work	**2g**	Improvement in classroom behaviour	**3g**	Improved engagement in science practicals
1h	Increased awareness of STEM careers	**2h**	Increased awareness of STEM careers	**3h**	Increased awareness of STEM careers
1i	Reduced workload, improved wellbeing	**2i**	Increased support to/from colleagues in other department(s)	**3i**	Increased ownership of learning (such as self-regulation and metacognition)
				3j	Increased skills in collaborative learning

Appendix 2: Evidence of Impact

Examples of Evidence of Impact
Schools were not limited to using these as evidence, and this list was provided to illustrate a range of examples. • Student progress / attainment data • Increased uptake of science post 16 • Student feedback (e.g. Pupil Voice, interviews) • Feedback from external observation of lessons (e.g.by a colleague, subject leader, LA representative, Ofsted, MAT leaders) • Positive peer feedback (TAs, teachers) • Positive changes to schemes of work/ lesson plans/assessment meth-ods/resources • School developmental plans / Faculty development plan • Videos/posters/photos • Your perceptions/ reflections / reflective journal • Parent feedback

Appendix 3a: Example of formative feedback

Project Description Provided by one school in their application (maximum word count was 200 words)
Science Roadshow - An interactive science workshop for our main primary feeder school delivered by science teachers and a range of our secondary students from disadvantaged backgrounds. This workshop will be accessible and inclusive, ensuring that students have the opportunity to participate. The workshop will connect Science topics to real-life issues or phenomena that students are familiar with and show them how science impacts their daily lives and communities. Role Models- Share stories of scientists from similar backgrounds to the students, highlighting the achievements of individuals who have overcome challenges to inspire students to pursue their interests in science. Current students can share their stories of transition to KS3 science and their achievements to motivate KS2 students. Peer Mentoring- Pair Year 6 students with secondary students from our school who are passionate about science and from a similar disadvantaged background. This mentorship can provide guidance and support as they transition into KS3. Peer mentoring can then be implemented further up in the school, buddying up KS3 students with KS4 students, allocating PSHE time for 'supporting Science progression'. Students will meet with their buddies and have any worries or questions answered and gain an insight into the achievements of older students.
Feedback provided to the school by an ASE assessor
This is a lovely project, that should carry many benefits far beyond the obvious ones around transition. Thank you to the school for this application. It is recommended that the school carefully identifies what the common issues are (or what the common issues have been in the near past) with their own underserved student population, and how this transition project will solve those issues in future. As this will help to shape some of the details of this plan, and will provide the school with more specific aims, which will help with impact analysis. There appear to be two main beneficiaries; i.e. future Year 7 students, as well as current students who will be acting in the mentoring role. Meeting underserved students' needs should be considered for *both* groups. It is recommended that the older students in the mentoring role are thoughtfully selected, so that it is not just those who are already doing well, but also includes those doing less well, who may find the mentoring role a positive and transformative experience.

Appendix 3b: Example of data adjustment process

Project description provided by one school in their application (maximum word count was 200 words)
Molecular modelling is useful in establishing links between chemical reactions in the lab to 3d molecular models and balancing chemical equations; chemical bonding; organic chemistry; spectroscopy etc. This allows greater student engagement as students often find it easier to visualise abstract atom or ion arrangements through physical modelling. This helps all students, particularly EAL and ALS students who struggle to understand verbal or written information. The following steps will be taken: • Obtain Molymod kit for every chemistry classroom using SIF funds. • Deliver staff CPD to share Johnstone's triangle from Royal Society of Chemistry. • Staff brainstorm its use to improve engagement and attainment on Level 3 Access to Higher Education chemistry, focusing on benefits for the many EAL and ALS students in college and all other students. • Staff work in pairs to improve lessons on specified topics and carry out peer observations. • Evaluate strengths and improvement areas, based on assessment and feedback. • Agree a plan for continuous improvement. • Student enrichment - take interested students to spectroscopy workshop at University of Liverpool, where they get opportunities to use IR and proton NMR spectroscopy to analyse molecular structures. This would further consolidate their prior understanding of molecular structures using 3d modelling (Molymods).

Impact report provided by one school (maximum word count was 300 words)	
At The City of Liverpool College, we used the SIF funding to buy 4 sets of Molymod kits and then also to fund a chemistry workshop on 17th June for our Access to H.E. Chemistry students the University of Liverpool. The Molymod kits were used in lessons for molecular modelling activities, which helped students understand molecular structures of organic compounds more clearly. This linked in well with the university chemistry workshop, where students synthesized benzocaine and then analysed its molecular structure (as well as those of some other compounds) by various spectroscopic techniques. The majority of students attending the workshop had English as an additional language and some had additional support needs. While all students who attended benefitted from the workshop, both the Molymod kits and the workshop were particularly useful for EAL and ALS students as they often struggle to follow verbal instructions. These hands-on activities helped them understand the complex theoretical concepts more easily, which will also help them in their university courses next year. In the long-term we are again going to use the Molymod kits to teach more batches if students next year and afterwards so they too benefit. Students have emailed me to say how much they enjoyed the activities and how useful they found these.	
Self-reported impacts	**Impacts after ASE's verification and adjustment**
1b, 1e, 1f, 1g, 1i, 2a, 2b, 2c, 2e, 2g, 3b, 3c, 3d, 3e, 3f, 3g, 3j	1b, 1e, **1d**, 1f, 1g, 1i, 2a, 2b, 2c, 2e, 2g, 3b, 3c, 3d, 3e, 3f, 3g, 3j Code **1d** *(Lead Teacher: Better use of new subject and pedagogy knowledge, skills and understanding)* has been added after adjustment. The rationale is that the lead teacher is now making better use of a new pedagogy (Johnstone's triangle) as part of their planning and teaching of chemistry.

Appendix 4: Data Table - Impact reported by 27 schools

Impact on Teacher			Impact on Science Department			Impact on Underserved Students		
1a	Improved enthusiasm and confidence for science	**8**	**2a**	Improved quality of teaching science with reference to inclusion	**10**	**3a**	Improved students' attainment in science knowledge, skills and/or understanding	**1**
1b	Increased pedagogical knowledge, skills and understanding of curriculum / assessment / practical work with reference to inclusion	**6**	**2b**	Improved leadership of science curriculum	**4**	**3b**	Improved students' progress in science knowledge, skills and/or understanding	**4**
1c	Improved subject knowledge and understanding of areas of the science curriculum	**2**	**2c**	Increased progress and attainment of underserved pupils in science	**4**	**3c**	Better depth of knowledge	**2**
1d	Better use of new subject and pedagogy knowledge, skills and understanding	**1**	**2d**	Increased profile/priority of science in school	**7**	**3d**	Better confidence, motivation and engagement in science	**15**
1e	Improved knowledge and skills in leadership and management of science teaching with reference to inclusion	**8**	**2e**	Improved sharing/dissemination of effective practice and resources	**6**	**3e**	Improved behaviour and safe working	**4**
1f	Positive impact in overall classroom behaviour	**7**	**2f**	Increased number of students considering studying Science at post-16 from underserved pupils	**4**	**3f**	Improved engagement in science	**9**
1g	Improved skills for supporting practical work	**5**	**2g**	Improvement in classroom behaviour	**6**	**3g**	Improved engagement in science practicals	**7**
1h	Increased awareness of STEM careers	**8**	**2h**	Increased awareness of STEM careers	**5**	**3h**	Increased awareness of STEM careers	**11**
1i	Reduced workload, improved wellbeing	**1**	**2i**	Increased support to/from colleagues in other department(s)	**1**	**3i**	Increased ownership of learning (such as self-regulation and metacognition)	**5**
						3j	Increased skills in collaborative learning	**3**

Appendix 5: Data Table - Verified and Adjusted Impacts made by 27 schools

Impact on Teacher			Impact on Science Department			Impact on Underserved Students		
1a	Improved enthusiasm and confidence for science	**13**	**2a**	Improved quality of teaching science with reference to inclusion	**14**	**3a**	Improved students' attainment in science knowledge, skills and/or understanding	**1**
1b	Increased pedagogical knowledge, skills and understanding of curriculum / assessment / practical work with reference to inclusion	**10**	**2b**	Improved leadership of science curriculum	**6**	**3b**	Improved students' progress in science knowledge, skills and/or understanding	**8**
1c	Improved subject knowledge and understanding of areas of the science curriculum	**6**	**2c**	Increased progress and attainment of underserved pupils in science	**4**	**3c**	Better depth of knowledge	**10**
1d	Better use of new subject and pedagogy knowledge, skills and understanding	**5**	**2d**	Increased profile/priority of science in school	**11**	**3d**	Better confidence, motivation and engagement in science	**20**
1e	Improved knowledge and skills in leadership and management of science teaching with reference to inclusion	**11**	**2e**	Improved sharing/dissemination of effective practice and resources	**15**	**3e**	Improved behaviour and safe working	**5**
1f	Positive impact in overall classroom behaviour	**9**	**2f**	Increased number of students considering studying Science at post-16 from underserved pupils	**4**	**3f**	Improved engagement in science	**15**
1g	Improved skills for supporting practical work	**6**	**2g**	Improvement in classroom behaviour	**5**	**3g**	Improved engagement in science practicals	**13**
1h	Increased awareness of STEM careers	**11**	**2h**	Increased awareness of STEM careers	**8**	**3h**	Increased awareness of STEM careers	**12**
1i	Reduced workload, improved wellbeing	**3**	**2i**	Increased support to/from colleagues in other department(s)	**5**	**3i**	Increased ownership of learning (such as self-regulation and metacognition)	**5**
						3j	Increased skills in collaborative learning	**5**

Appendix 6: Six CPD Modules on 'Inclusion in Science' - Intended Learning Outcomes

Intended Learning Outcomes from the Six Inclusion Modules

Module 1: Introduction to Inclusion

- Learn that there are key concepts of EDI, including the legal framework and their significance in an inclusive classroom.
- Learn that there are potential barriers to inclusion and what some of these are.
- Learn how to begin developing some strategies for an inclusive culture.

Module 2: Exploring Bias

- Learn that bias is something we all experience
- Learn that bias can present in educational settings.
- Learn how to begin to identify how unconscious bias might affect teaching, learning, students, and their outcomes.
- Learn how to start to identify strategies and thinking to mitigate the impact of unconscious biases on students.

Module 3: Inclusive Language

- Learn that there is a significant role that inclusive language can have.
- Learn that inclusive language can promote positive messages.
- Learn how to develop strategies for using more inclusive language.

Module 4: Inclusive Practice in the Classroom

- Learn that everyday strategies can be used to make learning in the classroom more inclusive.
- Learn that barriers to inclusion can be overcome.
- Learn how to reduce and remove barriers from the classroom.
- Learn how to reflect on your current practice with respect to inclusion.

Module 5: Inclusion in the Science Curriculum

- Learn that there is best practice for creating an inclusive curriculum which inspires people and fosters a sense of belonging.
- Learn how to evaluate and make suggestions for improvement for curriculum development.

Module 6: Engaging young people to take science further

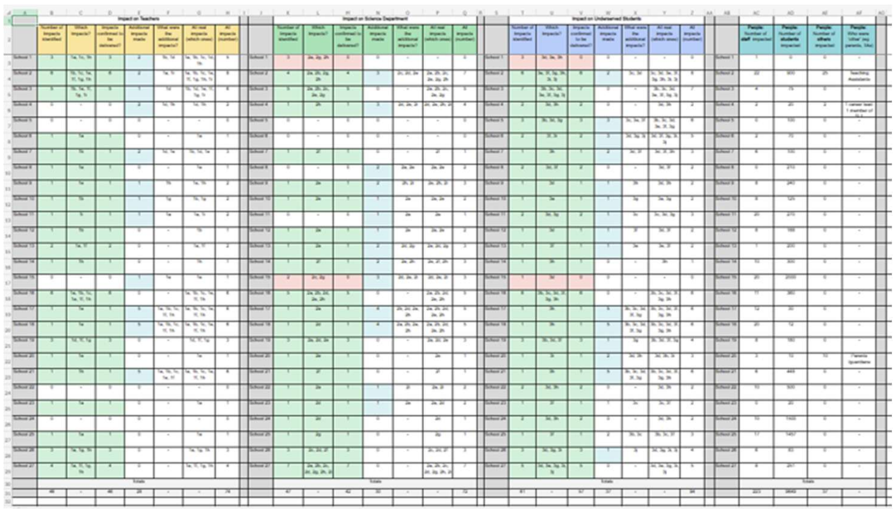
- Learn that inclusive careers encounters can increase student engagement.
- Learn how to review and improve existing careers encounters to ensure that they are inclusive, diverse, relevant, and regular.

Appendix 7: Raw, Verified and Adjusted Data for Impact Codes

Appendix 7.1 Data Viewing Location

Raw data on impact codes including verified and adjusted codes for each school may be viewed online here: [Raw, Verified, and Adjusted Data]

Appendix 7.2 Screenshot of Data (Reduced Size):



Appendix 7.3 Key for colours in data table:

	Verified as accurate
	Verified as inaccurate, with not all impacts reported being met.
	Additional impacts identified from school's written 300-word impact statement

Appendix 8: Full Case Study: *Tanbridge House School*

Project description	
There is a large empty wall approximately 7 m x 2 m at the entrance to the Science block that is visible to all students at all times as it is on one side of the main courtyard. I would like to paint a mural depicting a range of diverse scientists and their achievements on this wall to promote diversity and inclusion in science. The mural will be painted by the Leader of Art at Tanbridge House School; the design will be in collaboration with colleagues from the Science department. The mural will be used to support the school's existing Inclusion Quality Mark, and as a reference point for introducing these scientists into our curriculum. It should promote curiosity in students and send a clear message that science is for all.	
How many people will be impacted?	**Evidence to be collected**
The mural will be visible to all students and staff every single day, and will be referred to in lessons. It will also be immediately visible to any visitors we have to the school as it is in a main area. It would be a point of interest on school tours for parents and prospective students. It would also be used in our summer school for Year 5 as a way to learn about diverse scientists.	- student voice - staff survey - Lesson observation where the mural is being used to support the teaching of scientists and/or careers
Costs breakdown	
3 x days of teacher time = 3 x £250 = £750 3 x white masonry paint = 3 x £18 = £54 6 x concentrated acrylic solution (small) = 6 x £2.37 = £14.22 6 x concentrated acrylic solution (large) = 6 x £11.99 = £71.94	
Feedback provided to the school by an ASE assessor	
This is a highly creative project that, with some careful planning, should support the school's drive to raise inclusion. We are happy to fund this endeavour but with the following guidance and recommendations. We feel that there is a danger that the mural could become merely symbolic over the long term. While symbols are important, we would like to understand better how the mural will contribute towards the dynamic life of the school beyond those ideas stated in the application, and in particular how it will drive inclusion in real terms. These should be explained in the 'Impact Statement' that is expected towards the end of the project. We have some suggestions about how the project may be improved towards fulfilling our recommendations. These are suggestions only, and we leave the specific details up to the school. **Suggestion 1:** In addition to 'collaboration with colleagues from the Science department', we suggest that students are also heavily involved in designing the mural, e.g. researching which scientists could go on the mural, and why each is a good role model who deserves to be on the wall. This could be turned into a competition, with clear criteria given. Possibly capture the story of how the mural came into being for sharing with future cohorts (e.g. photo montage). **Suggestion 2:** Hold a 'launch' event to unveil the mural, in a way that links to raising awareness of science and careers among students/ parents/ carers/ governors - e.g. a STEM celebration event. **Suggestion 3:** Gather together as many ways as possible (in addition to those already stated in the application) to incorporate referencing the mural through clearly identified routes. For example, quizzes for students during Black History Month which requires them to extract STEM information from the mural, perhaps some of this information could be partially hidden or concealed in some way (just to raise interest). All of these ideas, if thought out well, should feed into the design stage of the mural. We wish you all the best with this exciting project!	

Tanbridge House School: Impact report

The mural is in the final stages of being completed but has already started to have an impact right across the school. As it is in a prominent position it is observed by every student and member of staff every day. An increasing number of students spend their break times at the science block to look at the mural and they have been discussing who the scientists might be and what they are known for. Despite not being finished yet the impact on 2d – Increasing the profile of science across the school is clear to see from this collection of student voice. Interestingly the students who have revisited the mural most days to continue talking about it are students who have found engaging with science and school in general challenging this year, which means that we have found an effective way to encourage greater attainment in science with these students through the mural. The other goals of the project are to improve confidence, motivation and engagement in science (3d) and an increased awareness of STEM careers (3h). The mural will play an integral role in September in the ongoing project to increase student's awareness of STEM careers and will be formally included in activities to promote these for all students across the school. The impact of this will then be measured through student voice and ultimately through measurement of the number of students who consider STEM subjects for A and T levels or apprenticeships to allow them to pursue a STEM career. There is also the intention to run extra-curricular competitions to encourage the students to engage with the mural so that they find out about a diverse range of scientists, which will hopefully improve confidence and motivation by showing them that anyone from any background can be a scientist. The impact of this again will be measured through student voice, and through the improved attainment due to improved motivation.

Note - The scientists included in the mural are:

1. David Attenborough - British Biologist and broadcaster.
2. Stephen Hawking - English Physicist known for work on black holes and the Big Bang theory. Had motor neurone disease.
3. Maggie Aderin-Pocock - British Space Scientist and broadcaster - presents The Sky at Night.
4. Elizabeth Anionwu - British nurse - first UK specialist in sickle cell and thalassaemia.
5. Mae Jamieson - first African American woman in space
6. Hayat Sindi - Saudi scientist who develops diagnostic tools for use in low-income countries to make health care accessible and affordable for all.
7. Dorothy Hodgkin - English chemist who won the Nobel prize for the discovery of the structure of insulin and penicillin
8. Neil deGrasse Tyson - American Astrophysicists and broadcaster
9. 9. Charles Kao - Chinese physicist who developed fibre optics and won the Nobel prize for this.

Picture of mural provided by the school	
	
Self-reported impacts	**Impacts after ASE's verification and adjustment**
2d, 3d, 3h	Verified – no adjustments made.