

Evaluation of Explorify

Interim report for STEM
Learning and the Primary
Science Teaching Trust

June 2023

Authors and acknowledgements

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We would like to thank all the teachers and those in the primary science community who contributed to the research.

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Executive Summary

Explorify is a free digital resource of engaging creative science activities for primary teachers, created by the Wellcome Trust and launched in 2017. It is designed to stimulate curiosity, discussion and debate in primary classrooms. In 2021, the responsibility for the management, continued development and delivery of Explorify was transferred to STEM Learning and the Primary Science Teaching Trust (PSTT).

The uptake and reach of Explorify has continued to significantly increase across the UK since STEM Learning and the PSTT assumed management of the resource, with 97,500 registered website users at the end of May 2023. STEM Learning and PSTT have successfully upheld the Explorify brand since taking on responsibility for its management and development, maintaining a suite of high-quality resources that have demonstrable impacts on educators and pupils. Resources are used extensively both in and outside of science lessons by educators who are passionate about the resource and its potential for teacher and pupil development, and actively promote it to others.

Evaluation approach

STEM Learning and the PSTT commissioned CFE Research to carry out an evaluation of Explorify to explore its impact on children and educators and to inform future development of the resource. An online survey for teachers, science leaders, senior leaders and home educators across the UK was disseminated during the first phase of the evaluation between December 2022 and April 2023, and achieved 598 responses. Depth interviews were carried out with six science leaders and two Explorify Champions.

Key findings

- **94%** of educators would recommend Explorify and promote its use both within their schools and via primary science networks.

[Explorify] is easy to use, it's easy to advocate for and it's easy to recommend it for planning purposes because it is so simple to use.

Science Leader

Pupil impacts

- **93%** of educators reported Explorify positively impacted their pupils.
- Educators reported that children's engagement in science lessons has increased:

96%

agreed Explorify has encouraged children to engage in discussions.

90%

agreed it has encouraged children to ask more questions.

81%

agreed children enjoy science lessons more.

Explorify breaks down barriers. It isn't 'don't put your hand up until you know the right answer'; there's none of that with Explorify. It encourages children to take part.

Science Leader

- Children's science skills have also improved because of using Explorify:
 - **81%** agreed that children make connections between science and their everyday lives more easily.
 - **75%** agreed that children's science knowledge and scientific vocabulary has improved.
 - **73%** agreed that children's scientific reasoning when answering questions has improved.
- Educators reported **enhanced wider skills** among children because of using Explorify:

75%

agreed children's confidence has increased.

70%

agreed children's oracy skills have improved.

- Explorify is an inclusive resource that can equally benefit children of all backgrounds and abilities. Educators also reported that it can have more positive impacts on some pupil groups:

34%

reported more positive impact on SEND children.

31%

reported more positive impact on children below the national average achievement in literacy.

24%

reported more positive impact on children from disadvantaged or deprived backgrounds.

21%

reported more positive impact on children who have English as an additional Language (EAL).

Impact on educators' teaching practice

- **93%** of educators reported that Explorify has positively impacted their teaching practice.
- **89%** of educators agreed they encourage children to take part in class discussions about science more frequently because of using Explorify.
- **72%** agreed they encourage children to predict what will happen when they do a science investigation more frequently.
- **69%** agreed that they enjoy teaching science more.
- **64%** agreed that they feel more confident teaching science.

Introduction

Aims and objectives of the evaluation

CFE Research has been commissioned by STEM Learning and the Primary Science Teaching Trust (PSTT) to undertake an evaluation of Explorify, a free digital resource of engaging, creative science activities for primary teachers.¹ Explorify was created by the Wellcome Trust and launched in 2017. It is designed to stimulate curiosity, discussion and debate in primary classrooms. In 2021, the responsibility for the management, development and delivery of Explorify was transferred to STEM Learning and the PSTT. Four Explorify Engagement Leads are employed to develop content and promote the website's use and are supported by network voluntary advocates known as Explorify Champions.

The findings from the evaluation are designed to inform the future development of Explorify. The findings explore:

- primary science teaching in the academic year 2022/23
- teachers' awareness and use of Explorify, the strengths of the resource and any challenges experienced by users who engage with it
- the outcomes and impact of Explorify on subject leaders, classroom teachers, pupils, and schools as a whole and how Explorify is bringing about these changes.

Approach

The findings in this report are based on data captured between December 2022 and April 2023 via a teacher survey and depth interviews.

Teacher survey

An online survey of teachers, science leaders, senior leaders and home educators from educational settings across the UK achieved 598 complete responses.² Those registered with Explorify were invited to take part in the survey between December 2022 and February 2023 via email. The survey was also promoted via STEM Learning newsletters and a link to the survey was included on the Explorify website. [Appendix 1](#) provides survey respondents' sample characteristics. Responses were achieved from Scotland, Wales and Northern Ireland but the sample size was not sufficiently large enough to carry out analysis by nation. Where relevant, survey findings are compared to those reported in the Explorify outcomes and impact [Wellcome report](#) published in 2020. We found that the majority (51%) of respondents to the survey were long-term users who started using the resource in the academic year 2019/20 or earlier. 18% of respondents signed up in 2020/21, 21% in 2021/22 and 10% in 2022/23.

¹ <https://explorify.uk>

² 585 respondents (98%) work in a primary school, 7 respondents (1%) work in an alternative setting for children aged 4-11 years, and 6 respondents (1%) are home educators. Home educators were not required to respond to questions focused on science teaching in schools so throughout this report the survey will be referred to as the 'teacher survey' and survey respondents will be collectively referred to as 'teachers.' Sub-group analysis by 'Science Leader' role and other teachers who are 'non-Science Leaders' will be clearly specified.

Depth interviews

Six semi-structured interviews with science leaders working in primary schools were carried out. The interviews explored science teaching in schools, teachers' use of Explorify, and the impact of the resource on teaching practice and pupils' enjoyment and understanding of science. The interviewees were identified via a recall question included on the teacher survey, which asks respondents whether they would be happy for a member of the research team to contact them about taking part in an interview. Representatives of schools which regularly engaged with Explorify and reported positive teacher and pupil outcomes and impacts were selected to take part.

Two Explorify Champions recruited by STEM Learning were also interviewed to explore how they support teachers to use Explorify through teacher training and science Continuing Professional Development/Learning (CPD/CPL) for qualified teachers. Champions' perceptions of what works well with Explorify, how the resource could be improved, and the impact of the Champion role on schools, teachers and home educators were also explored.

Primary science teaching in 2022/23

The importance of science

Respondents were asked to rate how important different subjects were to the Senior Leadership Team (SLT) in their school. Although the majority report that English, maths and science are important to their SLT, English and maths are more likely to be perceived as very important. Three-quarters state that English (77%) and maths (75%) are very important to their SLT; in contrast, less than a quarter (22%) perceive that the leadership team in their school regard science as very important.³

All respondents teach science in their setting and almost two-thirds (63%) strongly agree or agree that they spend sufficient time teaching the subject. However, just under one-quarter (23%) strongly disagree or disagree. Most teachers (83%) strongly agree or agree that the science curriculum enables children to make connections between science and their everyday lives.

Most science leaders interviewed describe how their school prioritises science alongside maths and English and that science is considered a core subject by their SLT. Some cite that additional science lessons are now being taught in their school alongside science-themed topic work. Science leaders describe undertaking activities to ensure science is prioritised within their school, including delivering internal CPD to staff, raising the profile of science through themed assemblies, inviting science specialists to speak in school, organising activities for National Science Week and the Great Science Share, and achieving or working towards the Primary Science Quality Mark (PSQM) and other primary science awards. Only one of the science leaders interviewed perceives that science within their school has been de-prioritised since Covid-19 to ensure pupils can catch up on maths and literacy.

Methods used to teach and lead science in schools

In most primary schools (90%), science is taught by classroom teachers. In a minority of schools (10%), which are largely independent schools, the subject is taught by specialist science teachers at least some of the time. Insights from interviewees indicate that science leaders also take an active role in planning and observing lessons delivered by classroom teachers. Interviewees also highlight that discussions between senior leaders, science leaders and classroom teachers inform how science is taught. Science leaders interviewed describe that in Early Years and Key Stage 1, science is integrated into lessons based around themed topics. Although a few schools continue with this approach in Key Stage 2, most begin teaching science as a standalone subject at this stage. Typically, schools follow National Curriculum science topics in Key Stage 2, usually for one hour per week.

A few science leaders interviewed indicate that they create science resources that link to other curriculum areas and encourage classroom teachers to undertake short science-based activities, including outside dedicated science lessons. This helps to ensure science is a thread running through the curriculum daily.

³ 31% of respondents to the science leadership and teaching surveys as part of CFE's prior evaluation of Explorify on behalf of the Wellcome Trust stated that science is very important compared to 88% for English and 86% for maths - [Wellcome Trust report \(2020\)](#).

Science-related CPD/CPL

Respondents were asked to state what CPD/CPL they had undertaken in the last 12 months. Most teachers (95%) had participated in some form to support their science teaching. Informal conversations with other teaching staff are the most frequent type of CPD/CPL (81%), followed by informal conversations with the science subject lead (68%). Teachers also frequently report reading information on social media platforms (41%) and online materials or research papers (34%) as further forms of informal CPD/CPL (see [Appendix 2](#) for further details).

In addition, teachers also access a range of formal CPD/CPL that is often delivered by an external organisation. The most popular forms of formal CPD/CPL are: training events delivered on school premises during a teacher training day or staff meetings delivered by other members of staff or an external organisation (36%); formal training events at another school location such as a network meeting (33%); and off-site face-to-face sessions delivered by an external organisation such as STEM Learning, the PSTT or ReachOut (28%) (see [Appendix 2](#)).

Some have accessed the CPD section of the Explorify website – around a third have read the teaching support pages (34%) and watched planning support videos (33%), and nearly a quarter have read the PSTT Science Leader Toolkit (24%).

Respondents were asked which type of CPD/CPL they valued the most for their own development when teaching or leading science. They report that off-site face-to-face sessions delivered by an external organisation such as STEM Learning, the PSTT or ReachOut (66%) and informal conversations with science subject leads are the most valuable forms of CPD/CPL (66%) (see [Appendix 2](#)).

Science leaders identify a range of benefits from participating in CPD/CPL, including being able to keep up to date with the latest science innovations, peer learning, and networking opportunities. Accessing CPD/CPL enables science leaders to cascade knowledge and examples of best practice to staff within their school, but time is required to ensure learning is shared in this way:

[External CPD] courses are really good because we get the time to disseminate it to the rest of the team, so not only is it impactful on you, it's impactful on them. I think if we didn't have that time to be able to share it, it would be rubbish - you would lose the impact because you don't get to share.

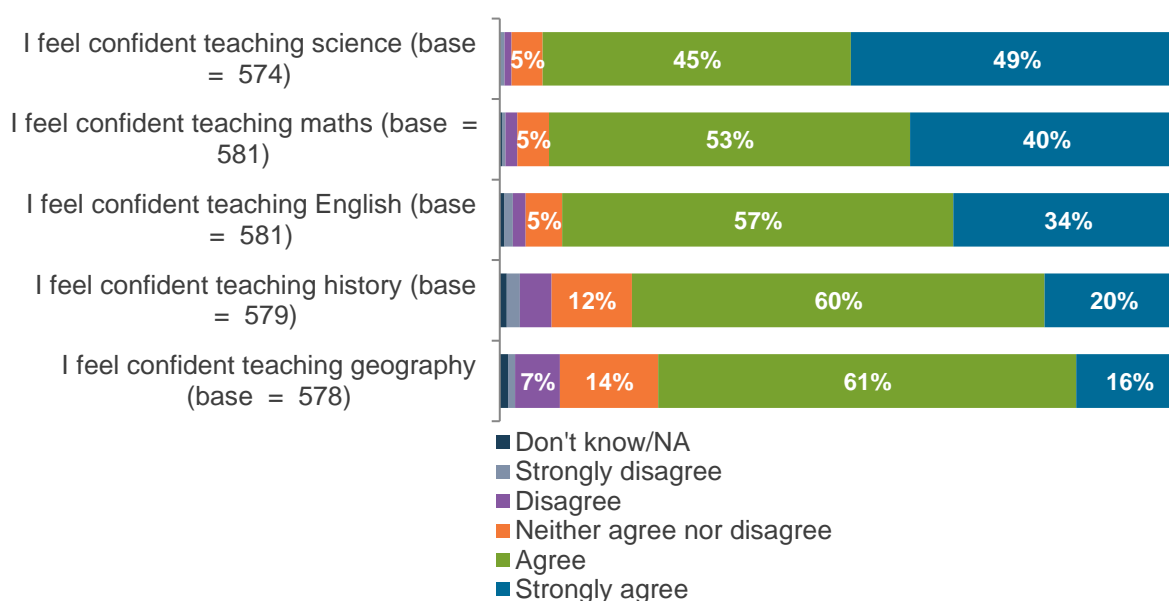
Science Leader

Science leaders interviewed report that the CPD/CPL they attend helps them to support teachers within their school with their lesson planning and running experiments, including by providing ideas for activities that teachers can deliver in lessons. CPD/CPL also enables science leaders to respond to science-related questions, undertake classroom observations and provide feedback more effectively, and signpost staff to external CPD/CPL opportunities that may be beneficial for their development. This in turn supports classroom teachers to work scientifically and embed their scientific skills in order to deliver more engaging science lessons.

Teachers' enjoyment and confidence in teaching science

Most respondents enjoy teaching science (96%) (58% strongly agree and 38% agree)⁴ and strongly agree or agree that they are confident in teaching the subject (94%) (Figure 1). Furthermore, respondents are more likely to strongly agree that they feel confident in teaching science (49%) compared to other subjects. This finding is driven by the high proportion of science leaders in the sample (55%). Twice as many science leaders strongly agree that they feel confident in teaching science than non-science leaders (61% compared with 32%).⁵

Figure 1: Extent of agreement about teachers' confidence teaching different subjects in the primary curriculum. Base: all those who teach science.



Respondents were asked to state the extent to which they agreed with statements about their confidence in various aspects of teaching and assessing science. Most teachers are confident in their science subject knowledge (88% strongly agree or agree) and feel confident teaching the skills to 'work scientifically' (82% strongly agree or agree). Teachers feel slightly less confident undertaking formative (ongoing) and summative (end of topic/final) assessment of children in science (74% and 71% strongly agree or agree respectively).⁶

Once again, science leaders are more likely to strongly agree that they feel confident with various aspects of their science teaching compared to non-science leaders (Table 1).

⁴ 95% of respondents to the Science Leadership and teaching surveys as part of CFE's prior evaluation of Explorify on behalf of the Wellcome Trust reported enjoying teaching science - [Wellcome Trust report \(2020\)](#).

⁵ In CFE's prior evaluation of Explorify on behalf of the Wellcome Trust, 59% of Science Leaders strongly agreed compared with 29% of non-Science Leaders - [Wellcome Trust report \(2020\)](#).

⁶ A full breakdown of teachers' confidence across the different curriculum areas can be found in Appendix 2 – additional analysis.

Table 1: Science leader and non-science leaders’ perceptions of confidence in teaching various aspects of science

Aspect of teaching practice	Science leaders (% strongly agree)	Non-science leaders (% strongly agree)
I feel confident in my science subject knowledge	51%	24%
I feel confident teaching the skills to ‘work scientifically’	38%	17%
I am confident undertaking formative (ongoing) assessment of children in science	28%	14%
I am confident undertaking summative (end of topic) assessment in science	25%	13%

Respondents tend to agree that the science curriculum allows children to make connections between science and their everyday lives (83% strongly agree or agree). However, nearly a quarter perceive that they do not spend sufficient time teaching science (23% strongly disagree or disagree that they spend sufficient time teaching science). Approximately a fifth are not confident that they will be able to answer children’s questions about science (21% strongly agree or agree).

Further analysis indicates that staff with a degree-level STEM qualification are less likely to be concerned about their ability to respond to children’s questions about science. Just over a quarter (26%) of staff with a STEM qualification strongly disagree that they are concerned they may not be able to answer children’s questions about science compared with 7% of those without a STEM qualification.

Science leaders are more positive in their responses across all statements compared to non-science leaders: more than twice as many science leaders strongly disagree that they are concerned they may not be able to answer children’s questions about science compared with non-science leaders (14% compared to 6%). They are also more likely to strongly agree that they spend sufficient time teaching science to the children they teach (27% for science leaders compared with 11% for non-science leaders) and that the science curriculum allows children to make connections between science and their everyday lives (31% for science leaders compared with 21% for non-science leaders).

The Explorify Champions interviewed report that they frequently work with teachers who lack confidence in their science subject knowledge and are worried about not being able to respond to children’s questions. Some teachers who are less confident use ‘off the shelf’ science schemes of work rather than developing their own lesson plans. In these instances, Champions recommend Explorify because the support videos help teachers to effectively plan their lessons:

I've been pushing Explorify for teachers who lack confidence in their science teaching or are new to teaching and get them to base their science lesson plans on Explorify and then pad it out further to make it relevant to their school context. The 30-minute planning videos, that's what Explorify was crying out for and they've done it really, really well. You might have a science teacher who isn't confident, but with Explorify, you get the 30-minute walk through and there's your lesson plan.

Explorify Champion

Teachers’ experience of using Explorify

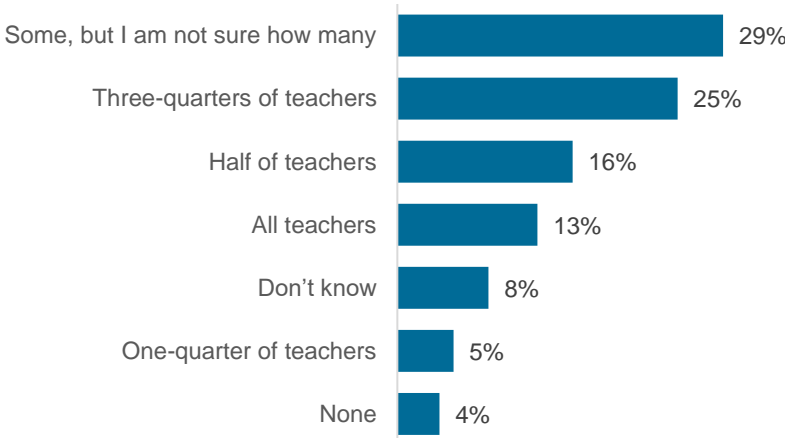
Awareness and take-up of Explorify

Respondents’ awareness of Explorify is high - 97% stated that they were aware of the resource before they completed the survey. This is unsurprising as the main source of survey responses was via a mailout to Explorify users. Other sources were from the Ogden Trust, the Centre for Industry Education Collaboration, and PSTT and STEM Learning website users. Science leaders indicate that teachers are introduced to Explorify in a variety of ways, such as through recommendations from other teachers, discussions in primary science networks, CPD/CPL training or by working towards the PSQM.

Monitoring data collected by STEM Learning indicates that the uptake and reach of Explorify has continued to increase across the UK since the management, development and delivery of Explorify was transferred to STEM Learning and the PSTT. Before the transfer to STEM Learning and the PSTT, there were 51,000 registered Explorify users. Since the handover user registrations have risen steadily with 97,500 users at the end of May 2023. From September 2022 to March 2023, the number of schools with at least one registered Explorify user has increased by 16%, from 11,008 to 31,962, representing 56% and 65%, respectively, of all UK schools.

The majority of those who are aware of Explorify use the resource to teach children in their current school (92%). Respondents who are aware of Explorify report varying levels of take-up of Explorify activities within their school – 25% indicate that three-quarters of teachers in their school use the activities in their classes, and a further 13% state that all teachers in their school use the resources. Only 4% of respondents report that none of their colleagues use the activities in their classes (Figure 2).

Figure 2: Science leaders’ perceptions about the proportion of teachers that use Explorify activities in their classes (base = 317)



Initial motivations

Science leaders interviewed describe a range of motivations for engaging with Explorify. One interviewee was seeking a science resource that was easy to use and that would help to stimulate classroom discussion during science lessons:

I could see that [Explorify] would be a great tool for getting children to start talking about science. I could see that the visual activities would be a great tool for assessing what children already know, which then helps to feed into planning lessons.

Science Leader

Another interviewee was attracted to Explorify because they perceived it would be easy to set up and help save them time. They were also impressed by the high-quality images and resources:

I was looking for a resource for the whole school to address different areas of the curriculum. It was the Explorify activities that attracted me - the Zoom In, Zoom Out, the Odd One Outs, the lack of pressure for children to actually get something right. And the quality videos as well - they are short and do everything you need to know in like 30 seconds, absolutely brilliant.

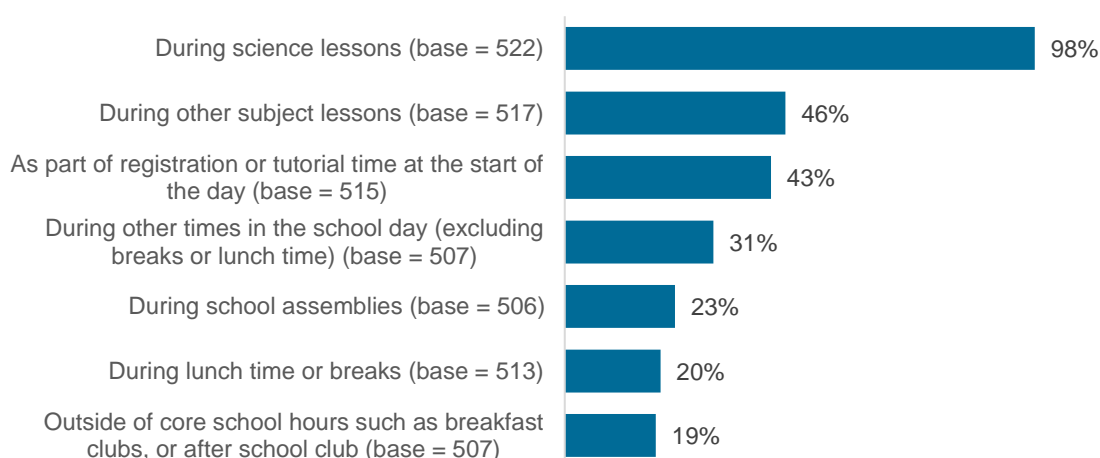
Science Leader

Other interviewees report that one of the reasons they decided to use Explorify is that it is equivalent in quality to other costed science resources. Alignment with the primary curriculum and the fact that the high-quality images provided ensure accessibility for all children are further motivations for interviewees wanting to use Explorify.

How Explorify is used

The majority of respondents report using Explorify during science lessons (98%).⁷ Explorify is also used within a variety of other settings, including during other subject lessons (46%) and as part of registration or tutorial time at the start of the day (43%) (Figure 3).

Figure 3: Settings where Explorify is used.⁸



⁷ 96% of respondents to the science leadership and teaching surveys evaluation of Explorify on behalf of the Wellcome Trust reported that Explorify is used during 'science lessons' and 31% reported that the resource is used during 'other subject lessons' [Wellcome Trust report \(2020\)](#).

⁸ Proportions collated for response options 'not regularly', 'every term', 'every half term', 'every month', 'every two weeks', 'every week or more', 'other frequency'.

Over half of respondents (52%) use it weekly or fortnightly and just over a third (34%) use it at least termly. In contrast, less than one in ten (9%) use the resource less than once per term.⁹

In settings other than science lessons, respondents report that Explorify is most likely to be used occasionally, with the most common response being 'less than once per term'. Interviewees describe how the resources are used by classroom teachers at the beginning or end of the day as a way of ensuring daily exposure to science beyond weekly timetabled lessons. One of the Explorify Champions endorses this approach to increase children’s science capital:

I encourage 5 to 10 minutes here and there to expose children to science more than once per week.

Explorify Champion

Science leaders report that teachers also use Explorify to develop guided reading and writing tasks during English lessons and that there is the potential to introduce the tool to literacy leads to support listening, oracy, reasoning and writing skills:

We flip the Explorify activities a bit sometimes, so the pictures are the stimulus for writing. At our school we did start to use Explorify in our literacy lessons...it's a great cross-over.

Science Leader

Strengths of Explorify

Explorify is perceived by interviewees to deliver a positive user experience. The reasons why teachers value Explorify are summarised in Table 2.

Table 2: Reasons why teachers value Explorify

Web platform	
Information is easy to find by topic and year group	"If you've used a resource, it will come back up and give you suggestions. I think 'thank you very much, you've just read my mind!'. It's brilliant; it makes such a difference to what you're doing, and it saves time." Science Leader
Brings up relevant resources based on open word searches	
Suggests future activities based on earlier searches	
Users can save materials to a personalised library	
Compares favourably to other web-based science resources	
Content	
Topics and enquiry maps link with the primary curriculum	"I can confidently say that 90% of the things that I am teaching, I know I can find something of real quality on Explorify to start with, to introduce something to the children or to build on their learning." Science Leader
Content supports the development of subject knowledge for teachers without scientific training	

⁹ The remaining 5% of respondents have not used Explorify within science lessons or have stated 'other' frequency.

Brand is associated with high quality and high impact images and videos which clearly explain scientific concepts, e.g. how a snowflake is formed	<p>"You can log on, find something and deliver it straight away. It's all done for you. The activities are easy to access, and you can get so much learning and discussion out of them."</p> <p>Science Leader</p>
Ready to use resources, thereby reducing planning time	
New content is regularly added, which keeps website fresh and stimulates new ideas	
CPD tools are valuable, and the 'background science' notes can be shared with academically able children	
Activities	
Fun and engaging	<p>"There's no fear in fun, is there? When you have 'Zoom In, Zoom Out,' you know it's going to be fun... we really get some cracking answers. But with these sorts of things, there's no fear, you can't really get it wrong, because the image could be any of those things, that's the real excitement of it." Science Leader</p>
Encourage discussion and debate about science, which supports vocabulary development	
Support inclusion and remove barriers to learning	
Help develop scientific skills, e.g. observation, enquiry and reasoning	
Common formats (e.g. 'Odd One Out' or 'Have You Ever...?') can be replicated to support listening, reasoning and oracy skills in other subjects	
Used across different settings	
Activities can be built into science lesson plans or used as 10-minute stand-alone activities in assemblies, tutor time, after school clubs, science clubs, and National Science Week activities to increase daily exposure to science	<p>"We do need to flip it a bit sometimes, so that's the stimulus for your writing and that's good for your science. At our school we've started to use Explorify in our literacy lessons...it's a great cross-over." Science Leader</p>
Used in literacy lessons (especially in Early Years and Key Stage 1) to promote discussions but also as writing prompts	
CPD resources	
Planning videos – highly rated by most science leaders who direct classroom teachers to the resources	<p>"The teacher support area is amazing. It's useful for teachers who have changed year groups or have gone into teaching recently." Science Leader</p>
Science leader toolkit is helpful (but not extensively used)	

Barriers to using Explorify

The minority of respondents who do not use Explorify with the children they currently teach were asked about the reasons why. A lack of time is the most common reason cited.¹⁰ A minority of teachers also report that lack of time to prepare the resources and a lack of IT facilities in their setting are barriers to use.¹¹

¹⁰ 'I have not had the time to look at the resources', base = 32 (67%)

¹¹ 'I do not have time to prepare to use these in lessons', base = 7 (15%); The school does not have the IT requirements needed to use the resources in class, base = 6 (13%)

All the science leader interviewees report that they do not have enough time to dedicate to the science leader role. As a result, they are not able to fully familiarise themselves with the CPD/CPL area of the website and disseminate the resources to classroom teachers as regularly and effectively as they would like.

Science leaders also highlight the pressure placed upon teachers to deliver a high volume of curriculum content in science lessons, especially for pupils in Years 5 and 6. A couple of science leaders perceive that there is insufficient time to include Explorify activities in science lessons for these year groups; as a result, the resources are used less frequently with older primary school pupils.

In the view of one Science leader, despite having a strong scientific foundation the recommended follow-on activities can stray from national curriculum objectives, which teachers are under pressure to deliver:

There are so many lovely activities but doing them all is probably not the best use of the teachers' time - I think because they love Explorify so much and it's all broken down as to what's happening and what needs to be taught, they do cling to it a bit, but it's not always as focussed on the national curriculum as I'd like it to be.

Science Leader

Recommending Explorify

Findings show that Explorify is widely recommended in a variety of ways. Over three-quarters of science leaders (77%) informally recommend Explorify to 'all' teachers in their school and a further 38% have informally recommended Explorify to 'some' teachers in their school, for example through discussions with specific year group teachers. Just over two-fifths (43%) formally advocate use of the resource by teachers in their school; for example, by building it into schemes of work. One third (33%) of science leaders have also promoted Explorify outside of their school.

Interviewees describe how they promote Explorify both within their schools and externally via primary science networks. Some of the science leaders advocate for Explorify during informal discussions and formal CPD sessions, echoing the Explorify Champion role. They share ideas for embedding the resources throughout schools by showing teachers how to run the different activities and link them to curriculum areas:

When someone else leads our network discussion - a professional from Primary Science Education or the Association of Science Education (ASE) - they're quick to talk about Explorify. When we're in break-out groups and we're talking about Explorify, I'll back them up and say 'Yes, it's brilliant - this is what you can do with it'. More and more teachers are recognising it now.

Science Leader

In my CPD work, there will always be some teachers in the room that use it and some who've never heard of it - you'll get that lovely discourse between them - the teachers who are using Explorify are extolling its virtues and how it can be used. It doesn't surprise me at all that teachers are telling everyone about it.

Explorify Champion

Future development of Explorify

Science leaders interviewed suggest that expansion of the 'Celebrating Scientists' section of the website (i.e. 'What's Going On?' and 'Who is.....?' activities) could enhance Explorify because the activities successfully challenge stereotypes about what science is and who can do science.

Explorify Champions perceive that although there is strong brand recognition in the primary science community, there is scope to further promote Explorify. In their view, teachers are not aware that renowned scientists contribute to the development of the Explorify resources. Promoting this may help to further strengthen the credibility of the resources, which in turn could encourage wider uptake from schools. Harnessing the potential of science leaders and increasing the pool of Explorify Champions could also help to further promote the Explorify brand.

According to Explorify Champions, there is demand for schemes of work containing a full suite of lesson plans accompanied by video lessons for each topic and corresponding activity sheets for children; for example, like White Rose Maths. Teachers that are new to the profession and/or without a science background are likely to find such resources beneficial. However, Explorify Champions and some science leaders express concern that schemes of work could deskill teachers and they can often fail to adequately contextualise knowledge for learners. Interviewees also express concern that developing work schemes could detract from the ethos of Explorify as a 'springboard' providing both teachers and children with the tools to think and reason for themselves. Requests for schemes of work could be seen as a departure from the original purpose of Explorify but STEM Learning may wish to consider this in the future.

Impact of Explorify on pupils

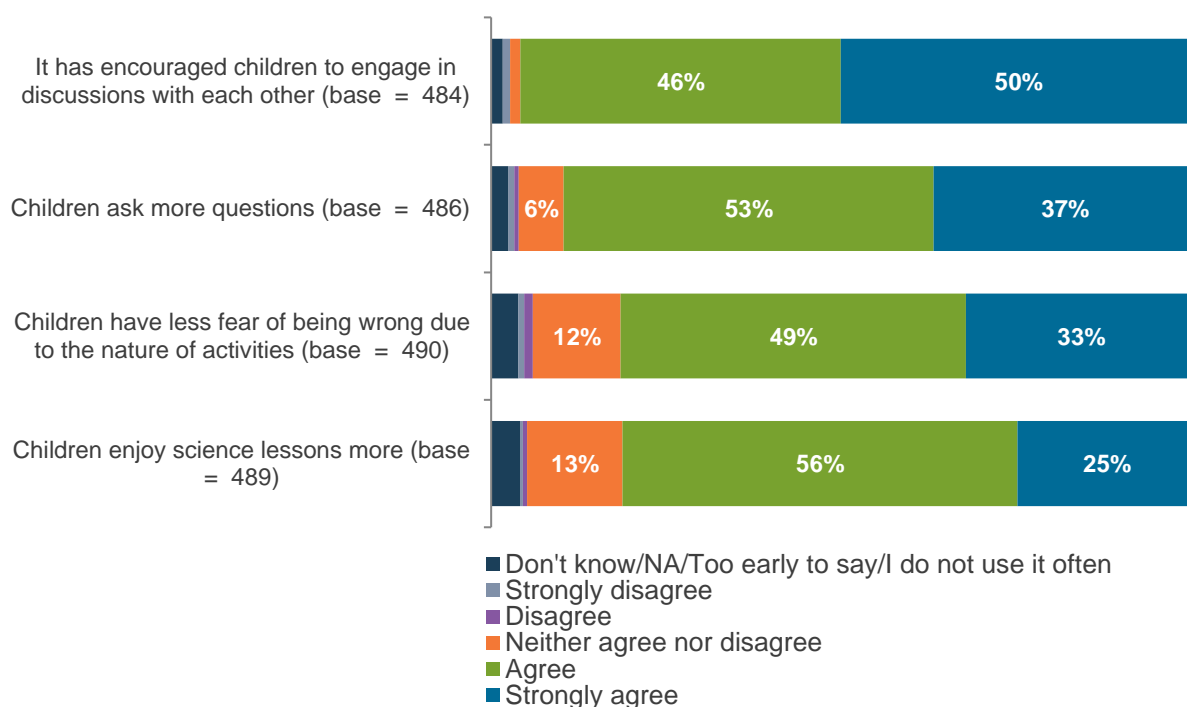
Respondents perceive that Explorify has a positive impact on the children they teach. Half (50%) think that Explorify has a 'high' positive impact and a further 43% report a 'moderate' positive impact. Only 3% perceive that it has a 'low' impact. None of the respondents perceive that the resource has 'no' positive impact.

Further analysis indicates that the perceived positive impact of Explorify on children increases with frequency of use. Frequent users are more likely to report 'high' positive impact (72% for at least once per week and 47% for at least once per fortnight) compared with those who engage with the resource less than once a fortnight (34%).

Engagement in science lessons

Respondents who reported that Explorify positively impacted on their pupils were asked to rate their level of agreement with a series of statements about how Explorify impacts on pupils in the classroom. The majority (typically between 80% and 90%) strongly agree or agree that Explorify encourages children to engage in discussions with each other and to ask more questions, reduces children's fear of being wrong and increases children's enjoyment of science lessons (Figure 4).¹²

Figure 4: Extent of agreement about the impact of Explorify on children's engagement in science lessons among those who report 'high' and 'moderate' positive impact.

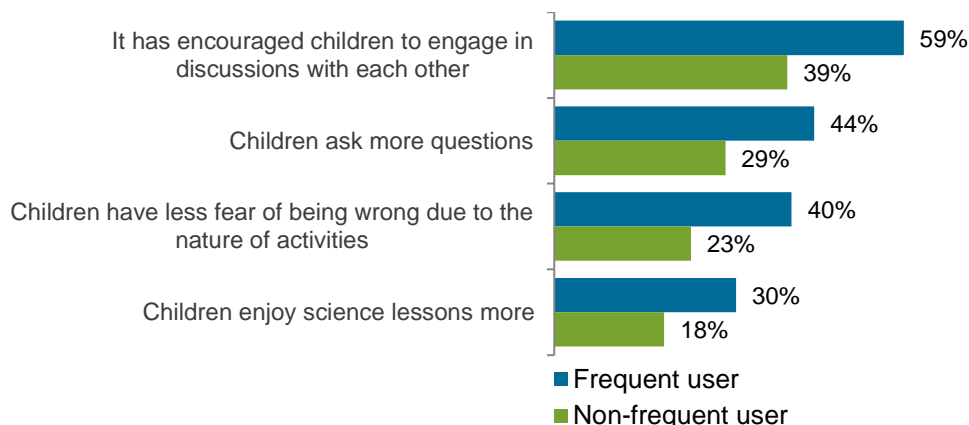


Furthermore, respondents who are frequent Explorify users (those who use it at least once a fortnight) are more likely to strongly agree that Explorify has positive in-

¹² 95% of respondents to the science leadership and teacher surveys evaluation of Explorify on behalf of the Wellcome Trust strongly agreed or agreed that Explorify had 'encouraged the whole class to engage in discussions when using the resource', 86% strongly agreed or agreed that pupils 'asked more questions when using Explorify' and 76% strongly agreed or agreed that pupils 'enjoy science lessons more when using Explorify' - [Wellcome Trust report \(2020\)](#).

classroom impacts on children’s engagement and enjoyment in science lessons compared to less frequent users (Figure 5).

Figure 5: Extent of agreement among frequent users (used least at once a fortnight) and non-frequent users (used approximately every month or less) who strongly agree that Explorify has a positive impact on children’s engagement in science lessons (Base: Frequent users = 282–287, Non-frequent users = 199–201).



Evidence from the interviews provides further insights into the positive impacts of Explorify on children’s in-classroom experience. The highly visual activities are perceived to encourage children to be curious, which in turn helps to ensure they remain engaged in lessons. Interviewees report that children find the activities exciting and are inspired to ask questions to help them solve problems. Science leaders highlight that activities such as ‘Zoom In, Zoom Out’ and ‘Odd One Out’ encourage children to participate in discussions and share the reasoning behind their solution, without worrying about whether they have the ‘correct answer’.

I think before we used Explorify our kids wouldn't have spoken up. They are quite good at talking but they would be quite nervous of getting it wrong. Children don't typically agree in the 'Odd One Out' but because there is no definite right or wrong during the exploratory stage, it encourages children to put their opinions forward - they all could be right or wrong, so it inspires confidence to 'have a go'.

Science Leader

Explorify breaks down barriers. It's low stakes. Children are willing to take part in answering questions that they might not if it was more formal. It isn't 'there is a right answer and a wrong answer' and 'don't put your hand up until you know the right answer'. There's none of that with Explorify; it encourages children to take part.

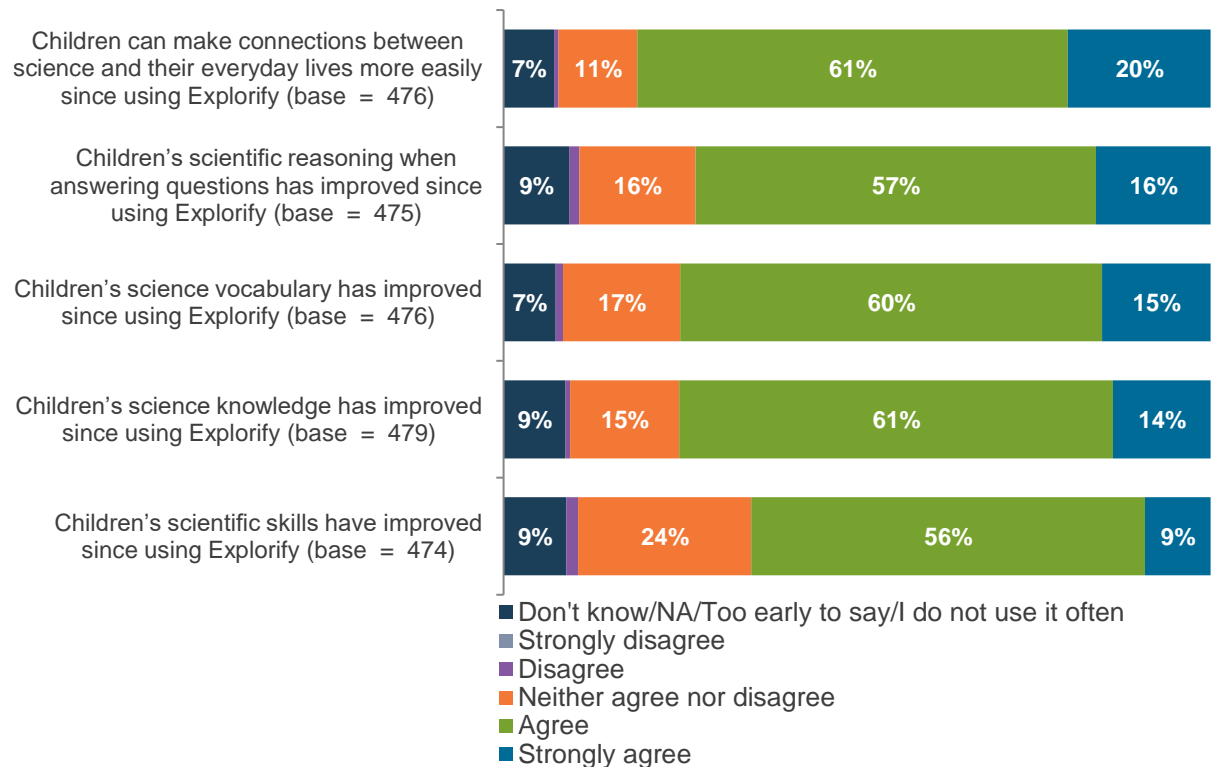
Science Leader

Children’s science skills

There is a high level of agreement among respondents that Explorify has a positive impact on children’s science skills. The majority strongly agree or agree that Explorify has a positive impact on children’s ability to make connections between science and their everyday lives (81%). Three-quarters strongly agree or agree that Explorify improves children’s science vocabulary (75%), science knowledge (75%) and scientific

reasoning when answering questions (73%). A further two-thirds strongly agree or agree that Explorify increases children’s scientific skills (Figure 6).¹³

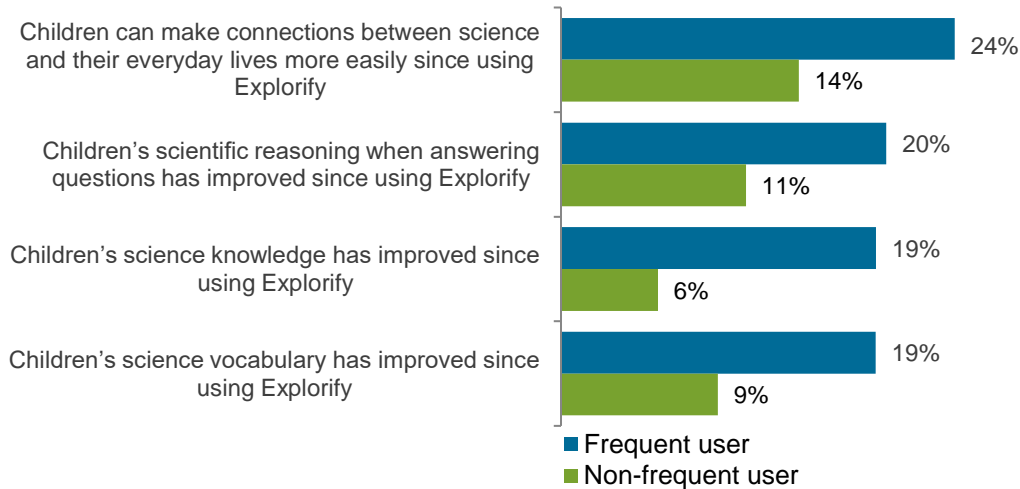
Figure 6: Extent of agreement about the impact of Explorify on children’s science skills among those who report a ‘high’ and ‘moderate’ positive impact.



Further analysis indicates that frequent Explorify users (those who use it at least once a fortnight) are more likely to strongly agree that Explorify has a positive impact on children’s science skills than less frequent users (Figure 7).

¹³75% of respondents to the science leadership and teacher surveys as part of CFE’s evaluation of Explorify on behalf of the Wellcome Trust strongly agreed or agreed that Explorify had increased pupils’ ‘science vocabulary’ and 80% strongly agreed or agreed that Explorify increased pupils’ ‘science knowledge’ - [Wellcome Trust report \(2020\)](#)

Figure 7: Proportion of frequent users (used least at once a fortnight) and non-frequent users (used approximately every month or less) who strongly agree that Explorify has a positive impact on children’s science skills (Base: Frequent users = 284-289, Non-frequent users = 188-190).



All science leaders interviewed emphasise the positive influence that Explorify has on children’s science skills. They suggest that the resource helps children to see that science is all around them and that they can make valuable contributions based on their lived experience:

Even children with only a small amount of knowledge can put that knowledge into a sentence and make a contribution... Then all the children can become interested in it, no matter what their level of literacy, no matter what their vocabulary is.

Science Leader

Interviewees identify that one of the key benefits of Explorify is that it supports children to develop their scientific and reasoning skills by expanding their perceptions of what counts as science and challenging stereotypes of who performs science through activities such as ‘Celebrating Scientists’, ‘Who is...?’ and ‘What’s going on....?’. Some report that Explorify helps children to catch up on learning lost during the Covid-19 pandemic.

Science capital is less about filling your basket with science experiences and more about valuing the science that is in everyday life. I think Explorify supports that: it helps children see that science is everywhere, it’s not just something that happens in a white coat in a lab. Science is a process and Explorify brings that curiosity, asking questions, wondering, thinking about what possibly could be going on. It’s not about being right or wrong. You don’t have to be a super-nerdy boffin to be a scientist; science is just about asking questions.

Explorify Champion

A further benefit of Explorify identified by science leaders is that it supports children to develop their scientific vocabulary and language. One interviewee reports that teachers use Explorify images and ask children to describe what they see using ‘star’ words or words to form a scientific glossary.

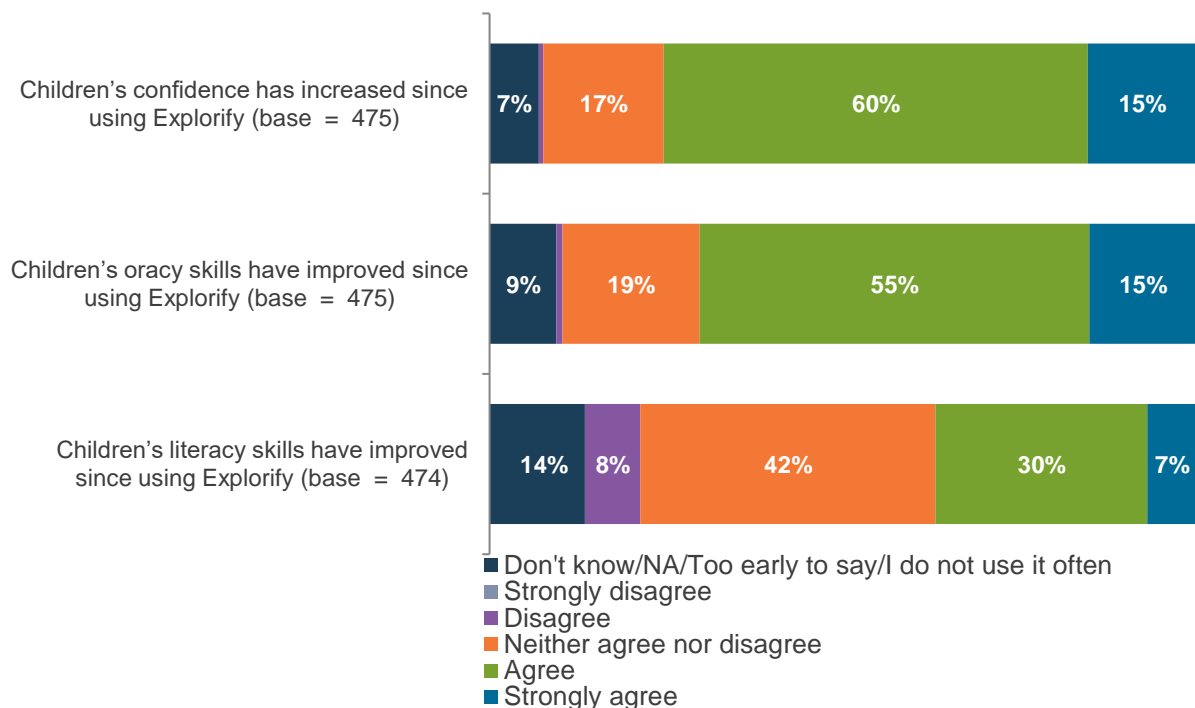
I've noticed more scientific vocabulary being used. A big part is observing the world around us and you can hear some of the language we've used when we've been discussing, say, the 'Odd One Out'. They're taking that away with them and it's interesting hearing the bits that stick. It is interesting that the vocabulary sticks.

Science Leader

Children’s wider skills

There is a high level of agreement that Explorify has a positive impact on children’s wider skills. Approximately three-quarters strongly agree or agree that children’s confidence has increased since using Explorify (75%) and that their oracy skills have improved (70%). In addition, 37% strongly agree or agree that Explorify improves literacy skills (Figure 8).¹⁴

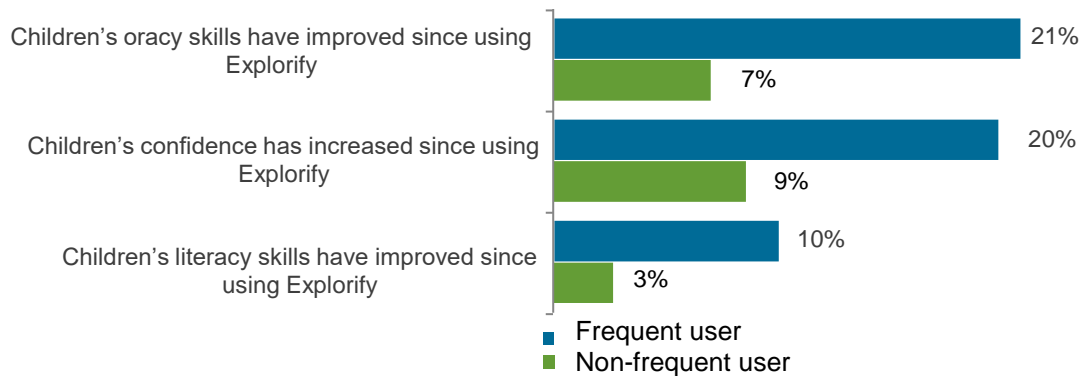
Figure 8: Extent of agreement about the impact of Explorify on children’s wider skills among those who report a ‘high’ and ‘moderate’ positive impact.



¹⁴ 66% of respondents to the science leadership and teacher surveys as part of CFE’s evaluation of Explorify on behalf of the Wellcome Trust strongly agreed or agreed that Explorify had ‘increased the confidence of pupils’ and 30% strongly agreed or agreed that the ‘literacy skills of pupils had improved since using Explorify’ - [Wellcome Trust report \(2020\)](#)

The relationship between frequency of use and perceptions of impact holds true for children’s wider skills, further reinforcing the evidence that impact increases with frequency of use (Figure 9).

Figure 9: Proportion of frequent users (used least at once a fortnight) and non-frequent users (used approximately every month or less) who strongly agree that Explorify has a positive impact on children’s wider skills (Base: Frequent users = 282-286, Non-frequent users = 187–190).



A few interviewees also attribute wider benefits, such as increased confidence and improvements in oracy, as a result of engaging in Explorify. Another science leader has observed that children are referring to activities that they have learnt through Explorify activities in their written and literacy work.

We are seeing that other departments are picking up on the fact that children are explaining things much better than they were and I think it's the consistency of using Explorify that's been a key thing here.

Science Leader

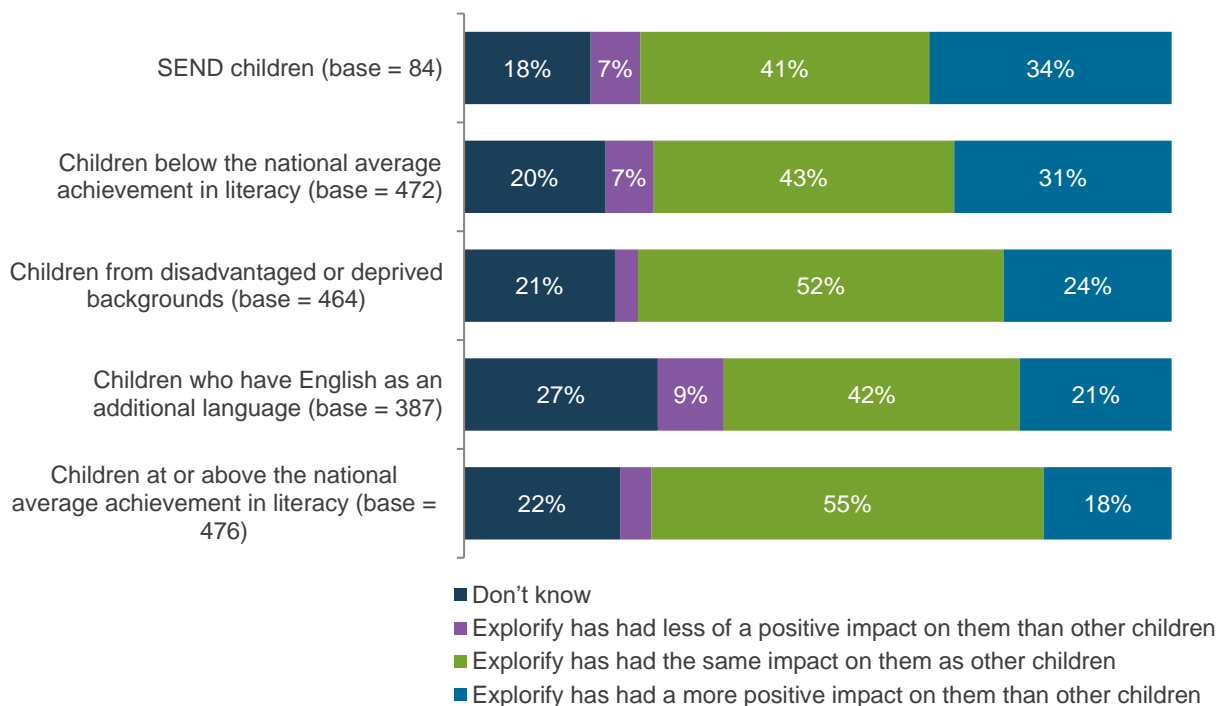
I think Explorify has given children the confidence to put their hand up a little bit more in other lessons. We've got a little boy in Year 5 who've I've always seen as being really quiet and when we're teaching science, his hand is constantly up and now I've got him for other subjects he's becoming a bit chattier and I think it's because of the positive response that he's got from sharing ideas. Explorify is the thing that gets him talking the most.

Science Leader

Differential impacts on pupils

Respondents were asked whether the use of Explorify has impacted different pupil groups. Respondents are most likely to report that Explorify impacts all pupil groups equally, suggesting that Explorify is inclusive. There is also evidence that Explorify supports children that do have additional needs. For example, around a third report that Explorify has a more positive impact on SEND children (34%) and children working below the national average in literacy than other children (31%). Only a minority perceive that Explorify has less positive impact on any one group compared to other children (between 3% and 9%) (Figure 10).

Figure 10: The impact of Explorify on different pupil groups.



The science leaders interviewed all emphasise the inclusivity of Explorify and that it can be delivered to all pupils without having to adapt or differentiate the activities. The resource can be used as a whole class activity universally:

There is no need to differentiate when using Explorify - it can be used with different ability groups in the same class. Everyone can access the material and contribute something.

Science Leader

They also credit Explorify as being creative and imaginative, enabling children of all abilities and backgrounds to engage in the activities. Science leaders report that some SEND children are overwhelmed by extensive writing or when they perceive a task to be too difficult, but Explorify is accessible and easy to engage with:

Science can be a leveller anyway, but Explorify helps lower ability children achieve in science. I've discovered in the past that some children who are working towards a lot of targets, who may not even meet them, when you actually use the Explorify tools, we discover that they have got the knowledge... they actually feel proud that they can share their knowledge.

Science Leader

Interviewees describe the benefits of the Explorify platform for those from disadvantaged backgrounds, where perhaps families have lower science capital, to tease out prior knowledge. This helps teachers to scaffold and build the next steps to enable children to develop their science knowledge and skills, including their vocabulary and reasoning skills. Explorify activities that validate children's lived experiences help develop their confidence and reduce perceived differences in contributions between different ability levels.

Many of our children have barriers to learning but they're very much into sport. The activities that use sport allow them to speak; they give them a platform to speak about something they know about and then they will feel pride that they can speak as much as someone that is more academically able. It builds celebration and pride.

Science Leader

Higher ability children can be stretched through reading the 'background science' and 'take it further' sessions. In this context, visual images are still viewed as effective tools for starting higher level discussions and deepening learning.

The higher ability children will pick things and relate it to what we are currently learning and will talk about the more abstract ideas - the things that you can't see. So, they will look at a battery and they will talk about currents, non-conservative form and electrons.

Science Leader

Science leaders also provide examples of how using the Explorify images can support children who have English as an additional language (EAL). EAL pupils are encouraged to draw pictures to communicate their understanding of science and wider topics until they have sufficient vocabulary to join in conversations. Teachers will pick out star words to support EAL children and ask them to build sentences using several key words associated with the science topic.

Anything that we can do that helps children use the vocabulary in a different context, or the right context, because if you can't talk it, you can't write it. And that's where I was able to get the whole school on board with Explorify and say to them it does stimulate conversation. Explorify really encourages children to look at vocabulary they wouldn't necessarily have.

Science Leader

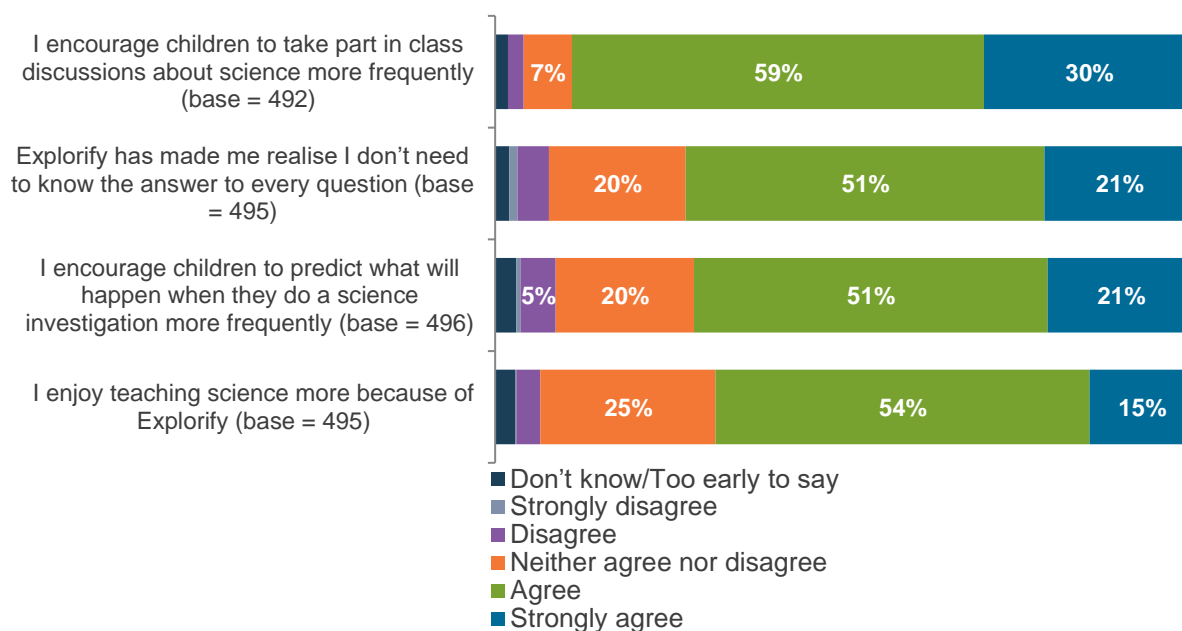
Impact of Explorify on educators

Most respondents (93%) report that using Explorify has had a ‘moderate’ (43%) to ‘high’ positive (50%) impact on their teaching. Only a small minority of respondents (4%) report a low positive impact.

Impact on educators’ practice

Respondents who reported that Explorify had a positive impact on their teaching were asked to what extent they agreed that Explorify had impacted on specific aspects of their teaching. Most notably, nine in ten respondents (89%) strongly agree or agree that it has led to them more frequently encouraging children to take part in class discussions about science. Just under three-quarters (72%) strongly agree or agree that Explorify has made them realise that they do not need to know the answer to every question and now more frequently encourage children to predict what will happen when they do a science investigation. A high proportion also report that they enjoy teaching science more because of Explorify (69% strongly agree or agree) (Figure 11).¹⁵

Figure 11: Extent of agreement about the impact of Explorify on teaching practice among those who use Explorify and teach science where a ‘high’ to ‘moderate’ positive impact is reported.

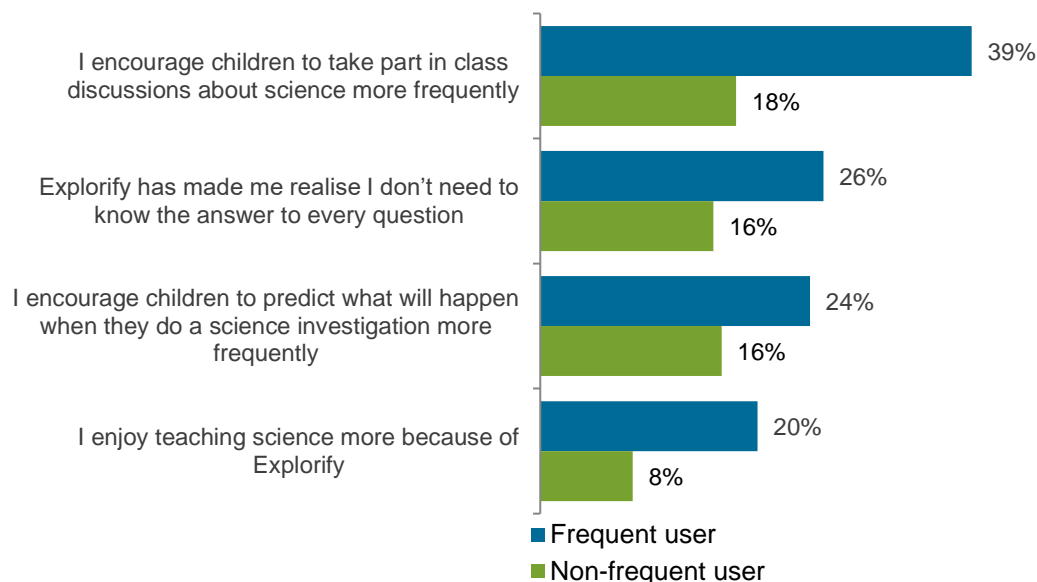


Respondents who are frequent users of Explorify are more likely to report that they strongly agree that the resource has had a positive impact on their teaching practice compared to ‘non-frequent’ users. This is particularly the case for encouraging children to take part in class discussions about science more frequently, where more than twice

¹⁵ 93% of respondents to the science leadership and teacher surveys as part of CFE’s evaluation of Explorify on behalf of the Wellcome Trust strongly agreed or agreed that Explorify had led them to ‘more frequently encourage pupils to take part in class discussions about science’, 80% strongly agreed or agreed that ‘Explorify had led them to enjoying teaching science more’, 67% strongly agreed or agreed that Explorify had ‘led them to more frequently encourage pupils to predict what will happen when they do a science investigation’ - [Wellcome Trust report \(2020\)](#).

as many frequent users compared with non-frequent users report this impact (39% for frequent user compared to 18% for non-frequent user) (Figure 12).

Figure 12: Extent of those who strongly agree about the impact of Explorify on teaching practice among ‘frequent’ and ‘non-frequent’ users. (Base: Frequent users = 288–290, Non-frequent users = 204–208).



Insights from interviewees mirror these findings, with science leaders highlighting that engaging with Explorify has changed teachers’ perceptions of their science teaching role. For example, one interviewee describes how it challenges teachers’ perceptions that science is not just about their ability to recall a precise answer to a question, but about their capacity to support children to pose questions and justify their arguments. The ‘misconception’ videos in the CPD area of the Explorify website are also credited with showing that science lessons do not have to follow a set format to be successful.

Our teachers feel a little worried that they don't know the right answer, but when you do the ‘Odd One Out’, it doesn't matter which one you think; it's the justification, your reasoning and your explanation that count.

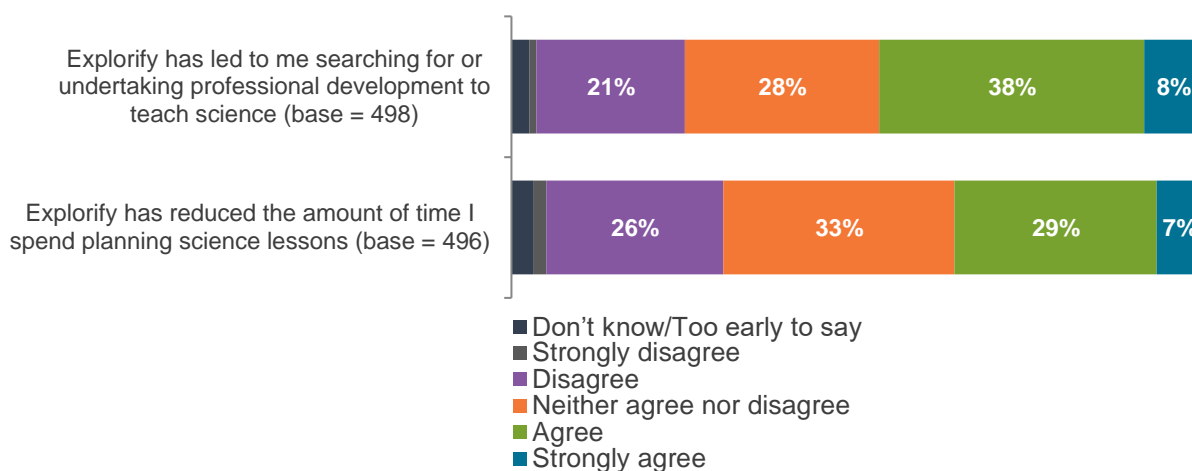
Science Leader

Wider impacts on educators’ practice

There is evidence that Explorify has a positive impact on encouraging teachers to engage in CPD/CPL science opportunities. Just under half of respondents strongly agree or agree (46%) that Explorify has led them to search for or undertake professional development to teach science. Explorify also has a modest impact on teachers’ lesson planning, with over a third (36%) reporting that it has reduced the amount of time they spend planning science lessons (Figure 13).¹⁶

¹⁶ 37% of respondents to the science leadership and teacher surveys as part of CFE’s evaluation of Explorify on behalf of the Wellcome Trust strongly agreed or agreed that Explorify had led them to ‘searching for, or undertaking professional development to teach science’ - [Wellcome Trust report \(2020\)](#).

Figure 13: Extent of agreement about the impact of Explorify on other aspects of teaching practice where a 'high' to 'moderate' positive impact is reported.



Interviewees also reflect that Explorify is used as a planning tool and that it can reduce the amount of planning time for science lessons because the activities are easily searchable and ready to use. Science leaders interviewed describe how they review teachers' lessons plans and encourage Explorify activities to be referenced in these plans. They also deliver CPD/CPL sessions for teachers where they demonstrate which activities link to different topics and introduce the planning videos.

[Explorify] is easy to use, it's easy to advocate for and it's easy to recommend it for planning purposes because it is so simple to use. If it was more complicated, you're not going to get the engagement from staff.

Science Leader

Impact on educators' confidence

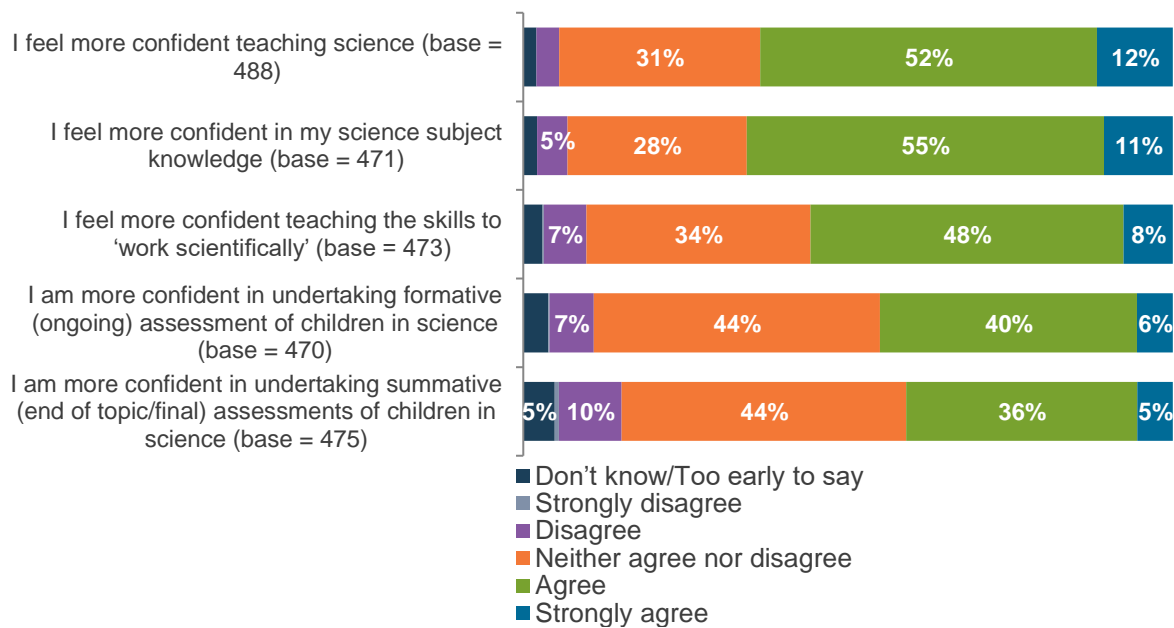
Findings show that Explorify is attributed to an increase in teachers' confidence across all aspects of their teaching.¹⁷ Almost two-thirds (64%) strongly agree or agree that since using Explorify they feel more confident teaching science¹⁸ and a similar proportion (66%) strongly agree or agree that they are more confident in their science subject knowledge. Just over half (55%) strongly agree or agree that they feel more confident teaching the skills to work scientifically. There is also evidence that Explorify supports teachers with their formative and summative assessment of children in science, although to a lesser degree compared to other areas of science teaching (between 41% and 46% strongly agree or agree about formative and summative assessment of science teaching) (Figure 14). This is a positive finding given that all respondents report lower levels of confidence undertaking formative and summative assessments compared to other aspects of teaching science.¹⁹

¹⁷ 94% of survey respondents report that they are confident teaching science, which is a high baseline positive for measuring increases in the impact of Explorify on confidence.

¹⁸ 64% of respondents to the science leadership and teacher surveys as part of CFE's evaluation of Explorify on behalf of the Wellcome Trust strongly agreed or agreed that Explorify 'had increased their confidence to teach science'- [Wellcome Trust report \(2020\)](#).

¹⁹ See Table 1 of the report on page 6.

Figure 14: Impact of Explorify on teachers' confidence for various aspects of teaching (for those who use Explorify and teach science and report a 'high' to 'moderate' positive impact).



Science leaders interviewed describe how Explorify has increased their own confidence, but more so the confidence of some of their colleagues who feel less prepared to teach science. They highlight that the resource is particularly useful in supporting Early Career Teachers, those without STEM qualifications, and staff who perceive that science is only for 'clever people'. The 'taking it further' sections of Explorify are described as particularly beneficial for new teachers because it supports them to build their lesson plan portfolio for science:

Some of our non-specialist teachers have said they found Explorify really good as a gateway into topics, particularly when they've not felt so confident themselves.

Science Leader

Interviewees cite that Explorify is used by teachers within their schools as both a formative and summative assessment tool, and report that Explorify helps teachers to feel more confident when assessing children. Interviewees describe how the same Explorify activities are used at the beginning and end of topics to compare children's knowledge and skills, and with different year groups to benchmark progress over time across the school. One science leader also cites how Ofsted is placing more emphasis on schools being able to evidence children's science knowledge retrieval and in-year progress, and that Explorify is one of the tools that can support this.

I use Explorify to assess children's knowledge and skills at the start of a topic and then come back and use the same activity again at the end of a topic. For example, with a 'Zoom In Zoom Out', I can measure how the knowledge, skills, vocabulary and reasoning have changed. I always encourage teachers to get children to talk about what they do know so teachers can gauge the starting point for different groups of children's knowledge. Even if it's something very simple, you can build upon a little knowledge and equally you can build upon higher level knowledge, then the next steps can be adjusted accordingly.

Science Leader

Explorify Champions interviewed also describe how during CPD/CPL sessions they encourage teachers to use Explorify to measure children's baseline skills and knowledge and progress towards science targets:

If you're using Explorify to establish what the children know already, that can be hugely valuable because it helps to tease out things that you wouldn't necessarily get if you just asked children to fill out a KWL grid²⁰ or drew a picture. It's very good at teething out conversations.

Explorify Champion

Impact on time spent teaching science

Respondents were asked about whether the overall time they spend teaching science to children has changed because of using Explorify. Nearly one-fifth (18%) have increased the amount of time they allocate to science teaching whilst approximately three-quarters (73%) spend the same amount of time. Just one percent spend less time teaching science.

Insights from interviewees suggest that one of the main reasons why the amount of time remains unchanged is because the time set aside for science each week is fixed across schools. Where teachers are increasing the amount of time they spend teaching science, this is largely due to using Explorify outside of science lessons. For example, Explorify activities are being used as short 5-10 minute fillers beyond formal science lessons to increase children's exposure to science.

I think it's really beneficial that you can use it, not just in science lessons, but squeeze science into other parts of the day with short activities.

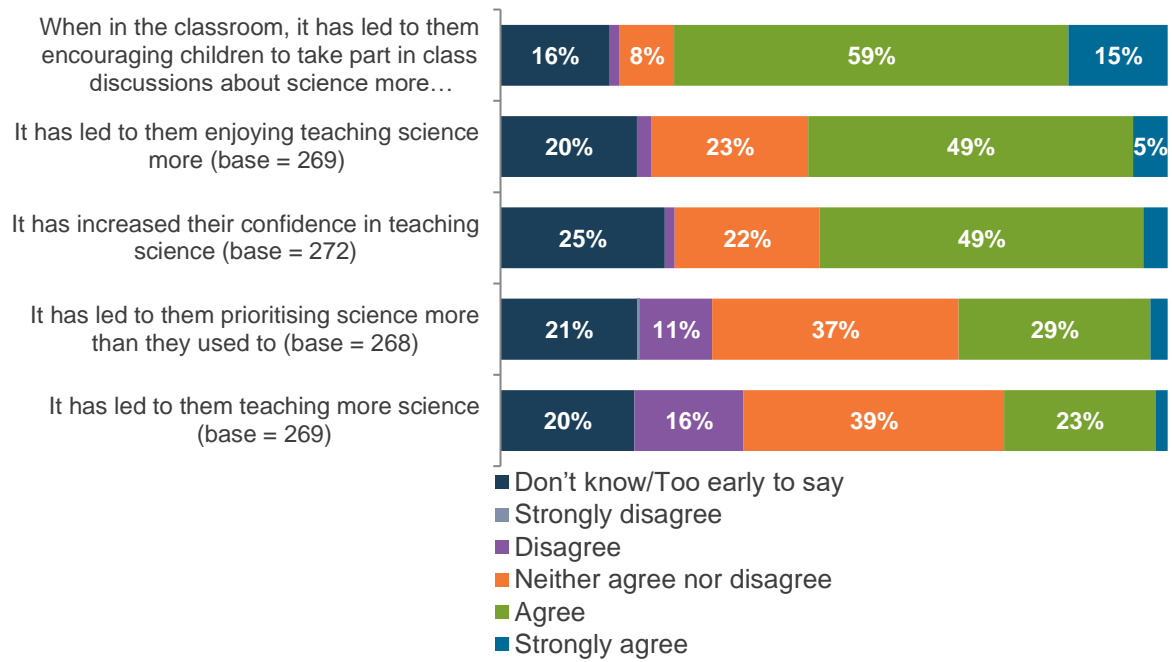
Explorify Champion

Impact on other teachers in a school setting

Science leaders and teachers who use Explorify were asked the extent of their agreement about the impact of Explorify on other teachers in their school. Nearly three-quarters (74%) strongly agree or agree that Explorify has impacted on other teachers' ability to encourage children to take part in class discussions more frequently. Just over half report that it has led other teachers to enjoy teaching science more and has increased their confidence in teaching science. Respondents also report positive impacts for other teachers in their school regarding the priority given to science and that they now teach more science (Figure 15).

²⁰ A KWL grid is a learning tool where the pupils are asked to list what they know (K) about a particular topic, what they want to know (W), and at the end of the topic, what they have learnt (L).

Figure 15: Extent of agreement about the impact of Explorify on other teachers in the schools of Science Leaders and teachers who use Explorify.



Conclusions

STEM Learning and the PSTT have successfully upheld the Explorify brand and significantly extended the reach of the programme since assuming responsibility for its management and development, maintaining a suite of high-quality resources that have demonstrable impacts on educators and pupils. Resources are used extensively both in and outside of science lessons by educators who are passionate about the resource and its potential for teacher and pupil development, and who actively promote it to others.

However, barriers remain impeding its use among both current and new users. Teachers lack time to familiarise themselves with the resource and some schools experienced technology-related barriers. Issues including the prioritisation of English and maths and a 'fixed' amount of time for science teaching exacerbate this further. The challenge now is for STEM Learning and the PSTT to consider how they can further harness their infrastructure, including the Explorify Champions to promote the benefits of the resource.

How science is delivered

In most primary schools, science is taught by classroom teachers with only a minority of science being taught by specialist science teachers. Senior Leadership Teams in primary schools view science as an important, core subject, but it is not considered to be as important as English and maths. Activities carried out by science leaders, including CPD/CPL, science themed assemblies and organising activities for the National Science Week, help to ensure that science remains a priority alongside English and maths within their school.

Educators generally enjoy teaching science and are confident in various aspects of their science teaching, including subject knowledge and teaching the skills to work scientifically. Educators are less confident carrying out formative and summative assessments in science.

Educators have engaged in a range of informal and formal CPD/CPL activities over the past 12 months to support their science teaching. Off-site, face-to-face CPD sessions delivered by external organisations, including STEM Learning, and informal conversations with a science subject lead are considered the most valuable forms of CPD/CPL.

Educators' experience of using Explorify

Explorify is a highly regarded resource that educators regularly engage with and widely recommend in a variety of ways. There is also good take-up of Explorify among other teachers within survey respondents' schools.

The primary reasons that initially motivate educators to use the resource include its ease of use, which helps to save time, and because it is free. The high-quality images and resources and alignment with the national primary curriculum are further reasons that motivate educators to start using Explorify.

Educators frequently use Explorify during science lessons. The resource is also used with varying frequency within a range of other settings, including other subject lessons, during registration or tutorial times and at other times in the school day.

There are numerous features that educators identify as key strengths of Explorify. The web platform is easy to navigate and information can be easily located. The content is fun and engaging for children, which encourages classroom discussion and debate. Educators also value the CPD resources Explorify offers.

Impact of Explorify on children

Explorify has a positive impact on children, with educators agreeing that it has a range of impacts on children's engagement in science lessons. The resource encourages children to engage in class discussion, ask more questions, be less fearful of being wrong and enjoy science more. There is also evidence of positive impacts on children being able to make connections between science and their everyday lives more easily, and improved science knowledge, vocabulary, reasoning and practical skills. More widely, children's confidence and oracy skills have improved since using Explorify. Children's literacy skills have also improved, but to a lesser extent.

A key attraction of engaging with Explorify is that the creative and imaginative resources can be used with all children without having to adapt or differentiate the activities. This suggests that Explorify is an inclusive resource that can equally benefit children of all backgrounds and abilities. It can also have more positive impacts on particular pupil groups including SEND children, those below the national average achievement in literacy, children from disadvantaged backgrounds, EAL children and those above the national average achievement in literacy.

Impact of Explorify on educators

Explorify has a range of positive impacts on educators and encourages some to increase the amount of time they spend teaching science. Most notably, the resource encourages educators to take part in class discussions about science. Explorify also supports educators to realise that they don't need to know the answer to all questions, and increases their enjoyment of teaching science. Explorify is used as a planning tool by teachers and has a positive impact on reducing the amount of time educators have to spend on lesson planning. Engaging with the resource also encourages teachers to engage in CPD/CPL science opportunities.

The resource supports educators to feel more confident in their science teaching, science subject knowledge and the skills needed to work scientifically. Engaging with the resource can particularly support educators who are less confident, including those without a STEM qualification and those who are at an early stage in their career. It can be an impactful tool to support educators with both formative and summative science assessment of children.

In addition, Explorify has a positive impact on other teachers in a school setting. Because of using the resource, other teachers encourage children to take part in class discussions more frequently, feel more confident and enjoy teaching science more.

Issues for consideration

Based on the emerging findings, to further develop Explorify, STEM Learning and the PSTT may wish to consider:

- **Exploring ways to further expand the reach of Explorify by drawing upon the insight to target groups experiencing barriers to science delivery.** For

example, with schools where only a minority of teachers use the resource, Early Careers Teachers who may be less confident teaching science and those without a STEM qualification. Capitalising on science leaders who frequently engage with and advocate the use of Explorify could further promote the positive impacts of the resource. Harnessing the potential of science leaders to increase the pool of Explorify Champions would further promote the Explorify brand.

- **Diversifying how educators engage with Explorify**, including helping educators to make connections beyond science lessons to further increase children's exposure to science. Also, consider how to promote the resource as a tool to support children's literacy and the assessment of children's science knowledge and skills.
- **The strategic expansion of Explorify in response to sector need**. This could include for example, expansion of the 'Celebrating Scientists' section of the website to challenge stereotypes of science.

Appendix 1: Survey respondent characteristics

The characteristics of those survey respondents are described below.

Educational setting

	Number	Percentage
Work in a primary school	585	98%
Another primary setting	7	1%
Home educator	6	1%

Role in school

	Number	Percentage
Headteacher/Executive Headteacher/Principal	5	1%
Deputy Headteacher/Assistant Headteacher/Vice Principal	40	7%
Other senior leadership position	28	5%
Middle leadership position	78	13%
Classroom teacher (including those with additional responsibilities)	416	71%
Teaching assistant	11	2%
Another role	6	1%

Science leader in school

	Number	Percentage
Yes, I am the science leader	323	55%
Yes, but I am not the science leader	222	38%
No	38	6%
Don't know	2	0%

Do you teach science to children aged between 4 and 11 in your school?

	Number	Percentage
Yes	596	100%
No	2	0%

Country

	Number	Percentage
England	557	93%
Scotland	18	3%
Wales	15	3%
Northern Ireland	8	1%

English region

	Number	Percentage
Southeast	98	18%
Northwest	78	14%
London	68	12%
West Midlands	67	12%
Yorkshire and Humber	62	11%
East	59	11%
Southwest	44	8%
East Midlands	43	8%
Northeast	26	5%
Not answered	12	2%

Gender

	Number	Percentage
Female	521	87%
Male	71	12%
Different gender identity	3	1%
Prefer not to say	2	0.3%

Full or part time worker

	Number	Percentage
Full time	449	77%
Part time	133	23%

Qualifications in science or STEM subjects

	Number	Percentage
Do not have a BSc or higher-level degree in a STEM subject	442	76%
Biology	52	9%
Mathematics	14	2%
Chemistry	13	2%
ICT/Computing	8	1%
Physics	8	1%
Engineering	6	1%
Design and Technology	3	1%
Another STEM Subject	55	9%

Years in the teaching profession

	Number	Percentage
Five or less	110	20%
Six to ten	136	24%
Eleven to fifteen	93	16%
Sixteen to twenty	87	15%
Over twenty	138	24%

School level characteristics

Type of school

	Number	Percentage
Local authority-maintained school	343	59%
Academy	193	33%
Independent school	25	4%
Special school	5	1%
Free school	3	1%
Other	12	2%

Size of school – number of pupils

	Number	Percentage
Less than 100	59	10%
100-250	231	40%
251-500	232	40%
More than 500	60	10%

Proportion of pupils from deprived backgrounds

	Number	Percentage
Up to 10%	116	20%
11-15%	89	15%
16-20%	65	11%
21-25%	48	8%
26-40%	74	13%
Over 41%	105	18%
Don't know	87	15%

Proportion of pupils with English as an additional language

	Number	Percentage
Up to 10%	255	45%
11-15%	55	10%
16-20%	43	8%
21-25%	35	6%
26-40%	53	9%
Over 41%	60	11%
Don't know	68	12%

Primary Science Quality Mark

	Number	Percentage
Yes, school currently holds it	129	22%
No, but school is working towards it	54	9%
No	312	54%
Don't know	88	15%

Appendix 2: Additional analysis

In the last 12 months have you undertaken any of the following Continuing Professional Development/Learning (CPD/CPL) activities for your own development when teaching/leading science?

	Frequency	Base	Percentage
Informal conversations with other teaching staff in your school	476	585	81%
Informal conversations with the school science subject lead	150	222	68%
Reading information on social media platforms	244	598	41%
Formal training events at your school during an INSET day or staff meeting delivered by other members of staff or an external organisation	208	585	36%
Reading Explorify teaching support pages, including 'Tackling the tricky bits'	203	598	34%
Reading other online materials or research papers	205	598	34%
Formal training events at another school location such as a network meeting	194	585	33%
Watching Explorify planning support videos	199	598	33%
An off-site face-to-face session of Science CPD delivered by an external organisation such as STEM Learning, the PSTT or ReachOut	168	598	28%
Completing online on-demand CPD courses delivered by an external organisation	155	598	26%
Reading the PSTT Science Leader Toolkit	142	598	24%
Reading the Explorify Science Leader Toolkit	126	598	21%
Completing real time online CPD courses delivered by an external organisation	104	598	17%
None of the above	31	598	5%
Other	16	598	3%

How valuable do you find the following types of CPD/CPL for your own development when teaching science/leading science?

	Not at all valuable	Of some value	Highly valuable	Don't know/Not applicable
An off-site face-to-face session of Science CPD delivered by an external organisation such as STEM Learning, PSTT or ReachOut	1%	16%	66%	17%
Informal conversations with the school science subject lead	0%	33%	66%	2%
Informal conversations with other teaching staff in your school	1%	39%	59%	1%
Formal training events at your school during an INSET day or staff meeting delivered by other members of staff or an external organisation	0%	31%	59%	10%
Formal training events at another school location such as a network meeting	2%	34%	50%	14%
Reading Explorify teaching support pages including tackling the tricky bits	1%	29%	42%	28%
Completing real time online CPD courses delivered by an external organisation	2%	41%	40%	17%
Watching Explorify planning support videos	1%	31%	37%	31%
Completing online on-demand CPD courses delivered by an external organisation	2%	49%	34%	15%
Reading the Explorify Science Leader Toolkit	2%	25%	31%	42%
Reading the PSTT Science Leader Toolkit	1%	22%	30%	47%
Reading other online materials or research papers	3%	56%	22%	19%
Information from social media platforms	8%	57%	18%	17%
Other	8%	18%	17%	57%

To what extent do you agree or disagree that you are confident teaching the following aspects of science?

	Strongly agree / agree	Strongly agree	Agree
Plants	95%	38%	57%
Materials	92%	36%	56%
Human body systems	89%	36%	53%
Biodiversity, habitats, and life cycles	88%	31%	57%
Changing states	86%	32%	54%
Light and sound	82%	27%	55%
Forces	82%	26%	56%
Earth and space	79%	25%	54%
Electricity	79%	25%	54%
Rocks and fossils	72%	21%	51%
Energy sources	68%	16%	52%
Climate challenge and sustainability	67%	17%	50%
Inheritance and evolution	63%	23%	40%
Scientific and technologic developments, past and present	56%	10%	46%