Involved in 2019-2020

28 schools | **10** companies | **341** teachers | **846** pupils | **22** site visits | **10** ambassador visits

Children Challenging Industry CCI 2019-2020

Since CCI began in 1996 55,000 pupils from almost 1,900 schools have experienced CCI, involving 1300 site or ambassador visits from more than 130 companies.

TEACHERS SAY:

'Superb CPD for teachers who are not especially confident in science and for schools with limited resources.'

'We got to complete experiments that we would not normally complete. Pupils really enjoyed the visit to the site – they loved seeing the different investigations/displays set up for them.'

'Children were enthused and excited by the project. It gave them the opportunity to think about careers that they may not have considered.'

'We had two excellent sessions in class and the children gained so much from the knowledge and enthusiasm of the advisory teacher.'

PUPILS SAY:

'I enjoyed the challenges where we could get "hands on."'

BOY, YEAR 6

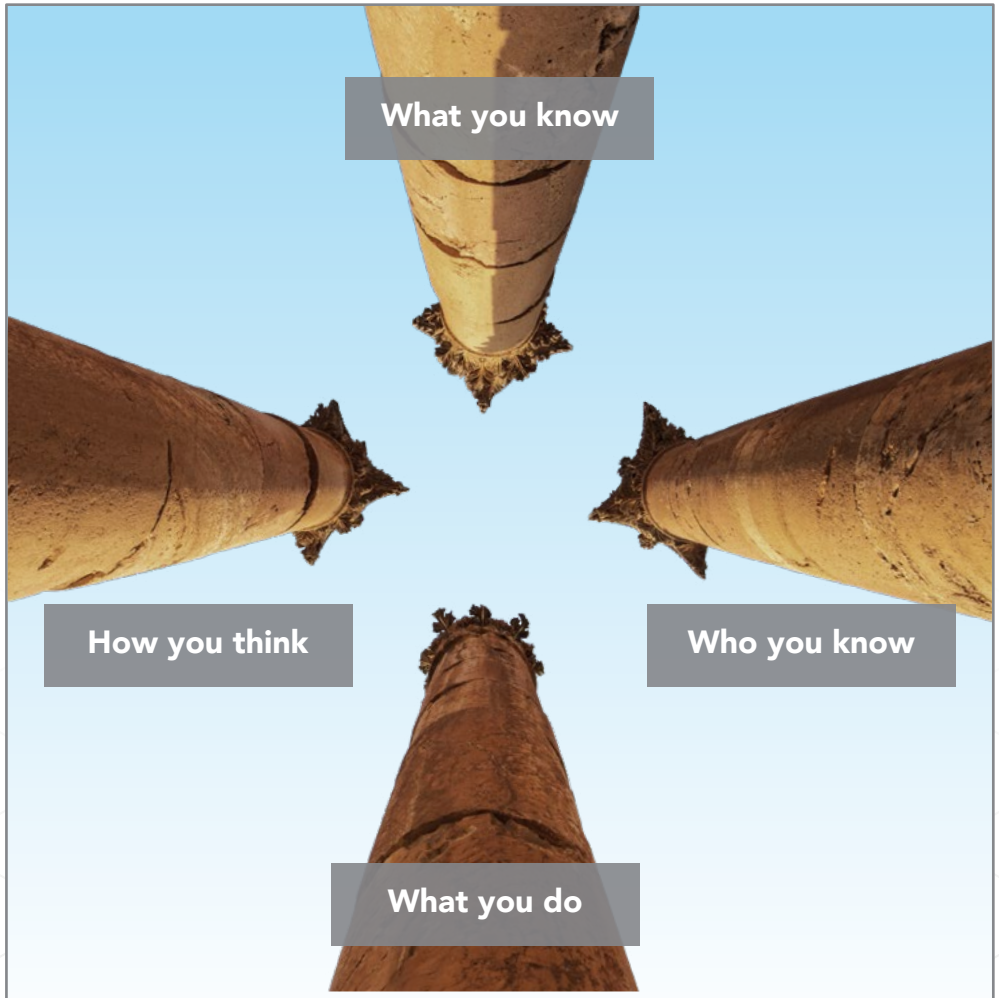
'I enjoyed seeing an actual lab and meeting real scientists. I also liked all the experiments we did.'

GIRL, YEAR 6

'We got to see how [the] industry really works, and I found the experiments interesting and it was fun. The experiments taught me lots of new things as well and changed my mind about working in industry.'

GIRL, YEAR 6

Science capital



'Science capital refers to science-related qualifications, understanding, knowledge (about **science** and "how it works"), interest and social contacts' (e.g. knowing someone who works in a science-related job)" (ASPIRES, 2013).

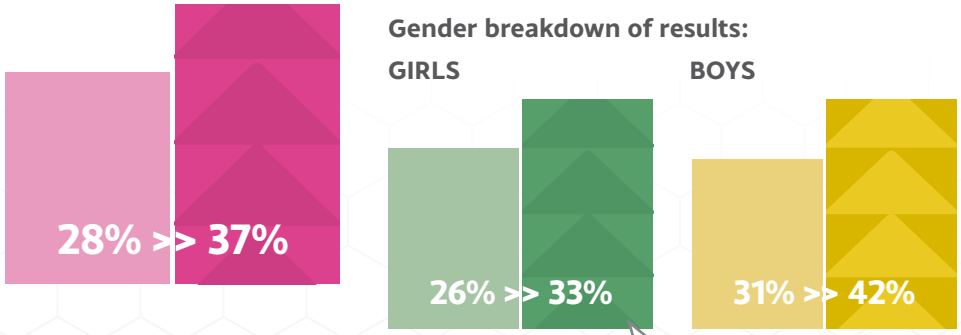
'Science capital is strongly related to engineering and physical science future study aspirations' (Moote et al., 2020).

What do you know and How you think – your science knowledge and understanding, and your views about science and industry

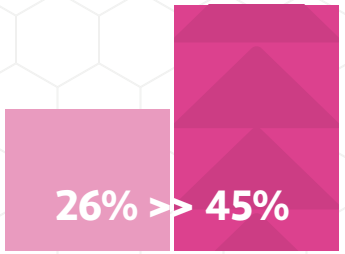
Judging by changes in ratings on a range of statements, attitudes towards science and industry have become more positive, and children's career aspirations have been raised over the course of the programme.

CHANGED ASPIRATIONS

I would like to be a scientist



I could work in industry in the future

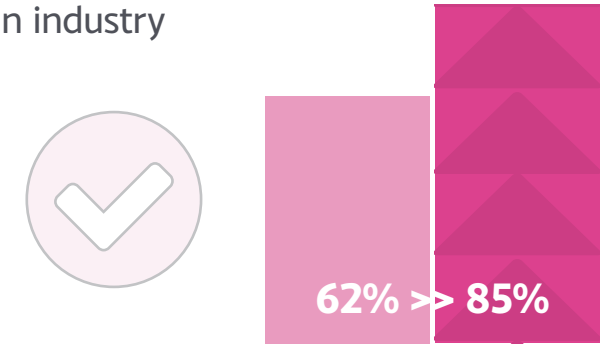


'I enjoyed doing all the experiments. It made me realise how much more important science is to our lives and it also gave me second thoughts that maybe I should be a scientist one day.'

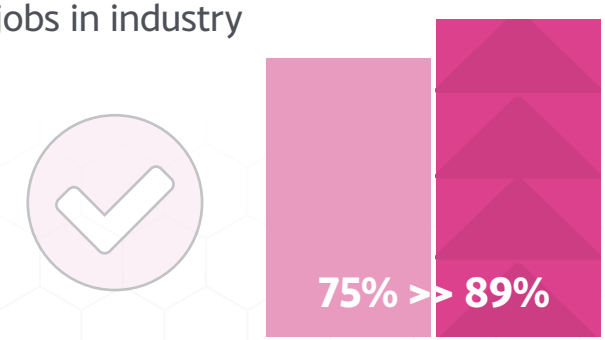
GIRL, YEAR 6

GREATER AWARENESS OF JOB ROLES

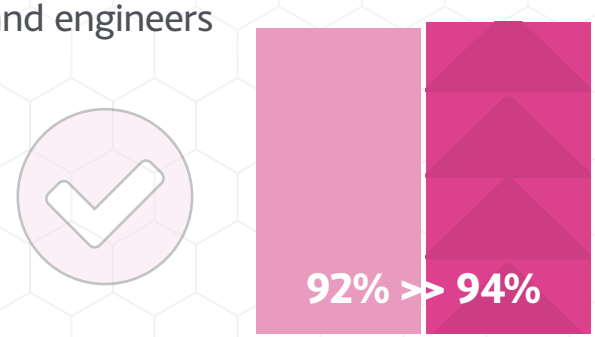
Many scientists work in industry



Scientists have important jobs in industry

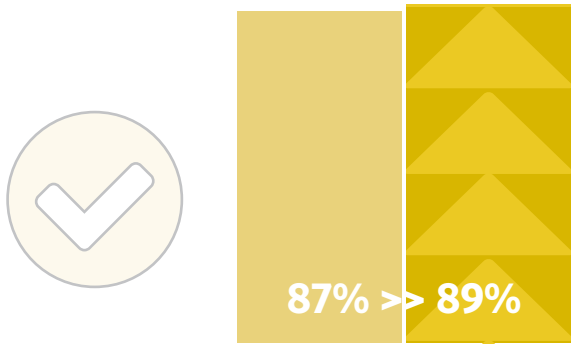


There are women scientists and engineers

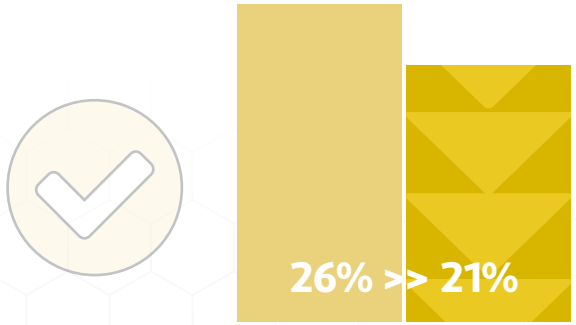


MORE FAVOURABLE ATTITUDES TO SCIENCE AND INDUSTRY

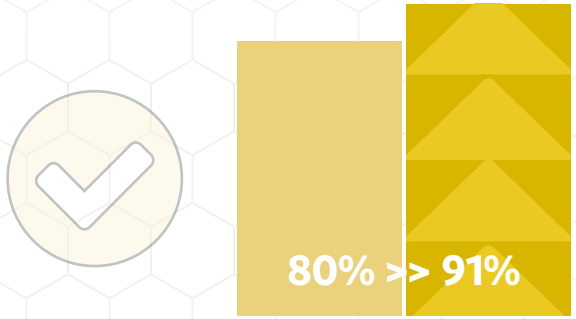
I like science



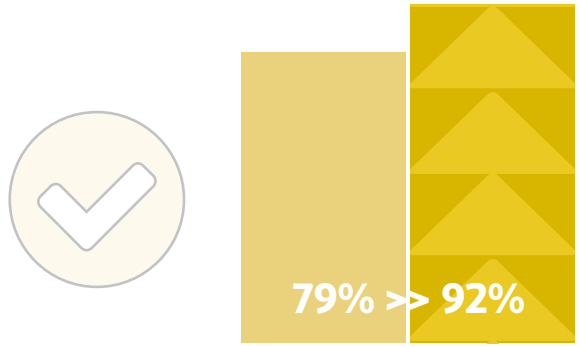
Science is too difficult



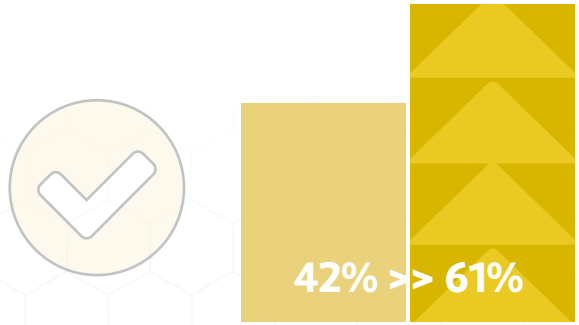
Industry makes things we need



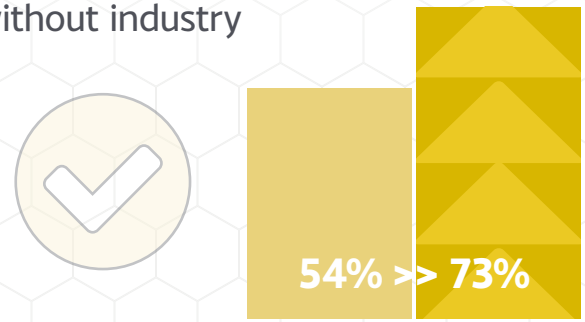
Industry is useful



Industry is safe



Our lives would be worse without industry

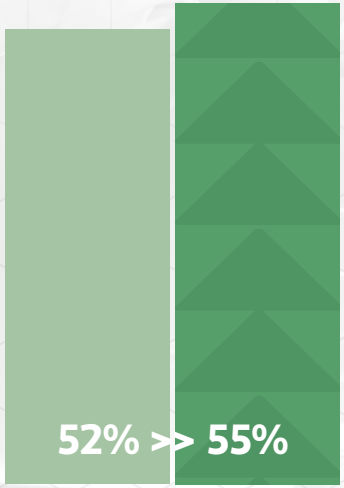


What you do – the science related things you do in your spare time

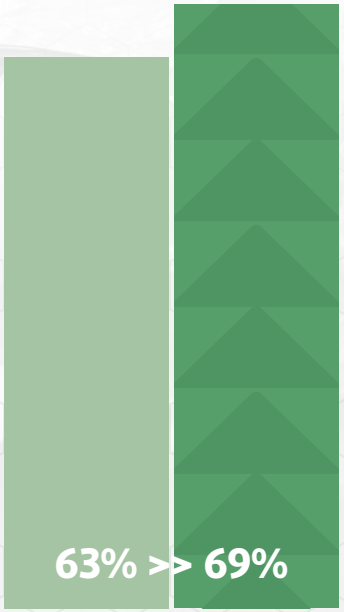
84% pupils visit a science centre, science museum or zoo at least once a year

Over the course of the project, children reported increased interest in participating in science related activities:

I like watching science programmes on TV or online
52% >> 55%



I like doing science experiments at home
63% >> 69%



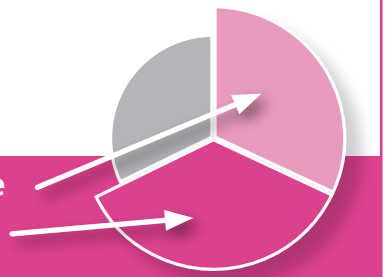
The people that help you know it – PARENTS and CARERS

TALKING ABOUT SCIENCE LEARNING IN SCHOOL:

72% talk to female parent or carer

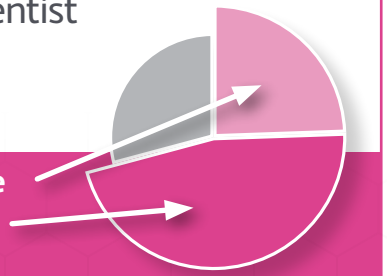
62% talk to male parent or carer

My parents think science is interesting



32% agree a little
36% agree a lot
(Total 68%)

My parents will be happy if I become a scientist



27% agree a little
51% agree a lot
(Total 78%)

My parents think it is important for me to learn science

22% agree a little
41% agree a lot
(Total 63%)

WHAT DID YOUR FAMILY SAY ABOUT YOUR SCIENCE LEARNING?

'Science is very fascinating; you should be a scientist.'
BOY, YEAR 5

'My family thought that it was amazing, and they all want to go see the industry and have a look around.'
BOY, YEAR 6

'They would like me to get involved in more science activities around school.'
GIRL, YEAR 5

'They were happy I was into STEM subjects and they said industry was a great job.'
GIRL, YEAR 6

The people that help you know it – AMBASSADORS

WHAT DID YOU TELL YOUR FAMILY ABOUT THE PEOPLE YOU MET ON THE VISIT?

'[The ambassador] was teaching us in a really fun way and she was very kind and she told us lots of interesting things.'
GIRL, YEAR 5

'That it really helped my learning to see a real worker!'
BOY, YEAR 6

Focus on teachers

More than half of participants in the CCI programme had attended one day or less science training in the previous three years. This highlights the need to engage primary school teachers in science related professional development.

The CCI programme delivers professional development sessions to all teachers in participating schools. Additionally, teachers observe and reflect on best practice when working with the CCI advisory teachers on the classroom activities.

450 teachers received **527 hours** of CPD through the CCI programme

Before the programme, three teachers reported having previously heard the term "science capital". Several teachers have said that their understanding of the term and its relevance to teaching has improved through the CCI programme:

'It has definitely broadened my understanding of the potential for science-related jobs in our local area.'

'I feel I am more aware of it and feel I should encourage my own and the children in my class to get more involved [in science activities].'

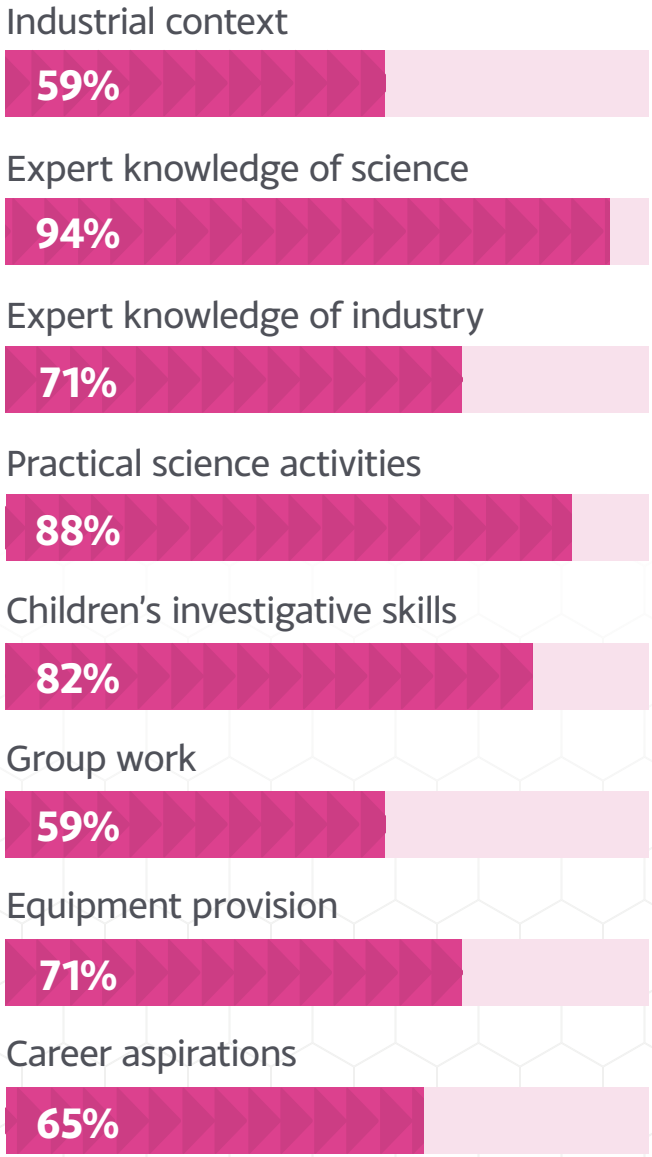
Participation in the programme has also improved teachers' own attitudes towards industry and their understanding of possible STEM careers within it. More teachers reported feeling more comfortable teaching about STEM in everyday life.

'I loved the enthusiasm of the advisory teacher and I have since used some of the terms and techniques that she modelled in sessions in class.'

'I plan to find more opportunities to include practical science in my science teaching.'

100% of teachers have said that the CCI programme is excellent or good:

Strengths of the CCI programme



REFERENCES

ASPIRES. (2013). *Young people's science and career aspirations, age 10-14*. Retrieved from ***https://www.kcl.ac.uk/ecs/research/aspires/aspires-final-report-december-2013.pdf***

Moote, J., Archer, L., DeWitt, J., & MacLeod, E. (2020). Science capital or STEM capital? Exploring relationships between science capital and technology, engineering, and maths aspirations and attitudes among young people aged 17/18. *Journal of Research in Science Teaching, 57*(8), 1228–1249. ***https://doi.org/10.1002/tea.21628***

To learn more or find out how you can become involved please:

Visit our website:
www.ciec.org.uk
Call us on **01904 322523**
Email: **ciec@york.ac.uk**
Centre for Industry Education Collaboration
University of York,
Heslington,
York, YO10 5DD

CENTRE *for* INDUSTRY
EDUCATION COLLABORATION

51141 – york.ac.uk/design-print-solutions