

STEM Learning: Why is it so important?

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STEM Learning

- Formerly known as Science Learning Centres/Network
- National Network providing subject specific support
- DfE supported
- Delivery across ~50 Science Learning Partnerships, 2 in the North East of England
- We support and have partnerships with other local agencies, such as Local Authorities and other agencies
- Ever closer links with STEMnet.

Our vision is

**A World-Leading STEM Education
for ALL Young People**





What would be the rank order of these factors in engaging with STEM careers?

Job opportunities

What I want to do
in the future is...

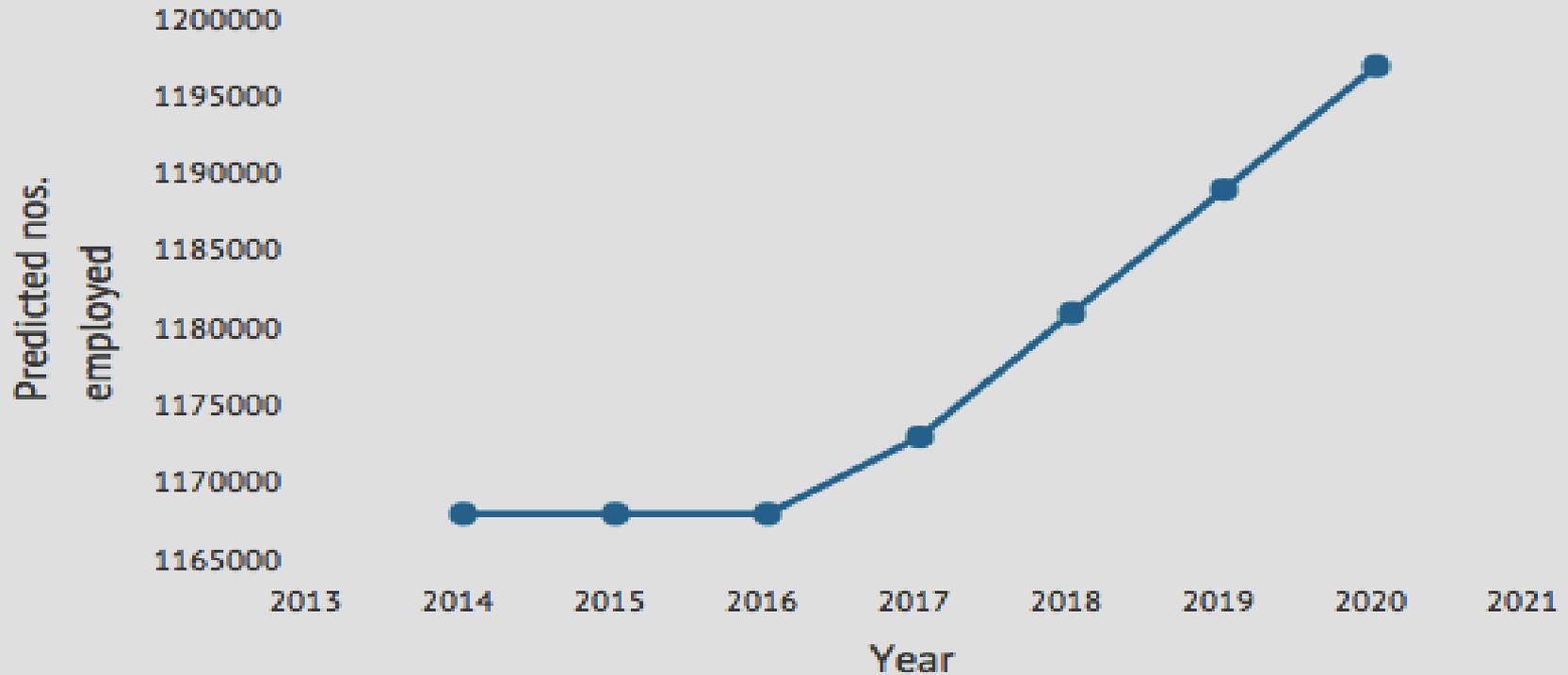


What I want to **be**
in the future is...





Employment forecast: North East



This graph shows the predicted numbers of people that will be working in this region between now and 2020.

Source: <https://nationalcareersservice.direct.gov.uk/advice/planning/LMIMaps/Pages/North%20East/North-East.aspx>

Important industries in the area

Food and drink

Vehicle manufacturing

Logistics and distribution

Pharmaceuticals

Types of jobs in these industries

Food processing worker

Automotive engineer

Warehouse operative

Chemical plant process operator

Source: <https://nationalcareersservice.direct.gov.uk/advice/planning/LMIMaps/Pages/North%20East/North-East.aspx>

Vacancies by Sector

Sectors employing most people: North East

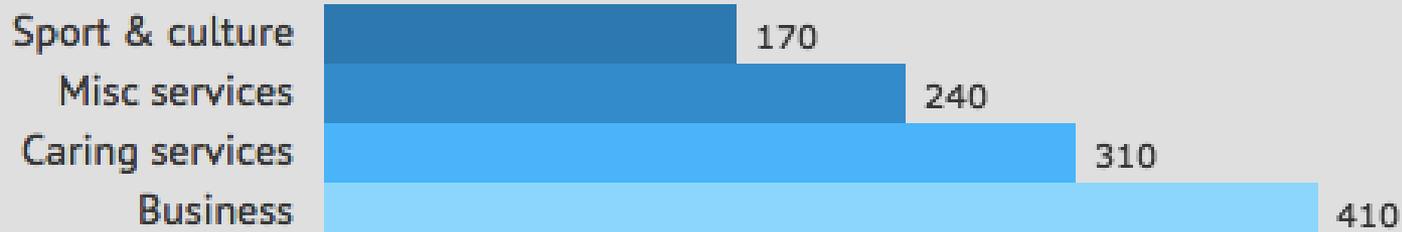


This chart shows the occupational sectors that employ the most people in this region.

Source: <https://nationalcareersservice.direct.gov.uk/advice/planning/LMIMaps/Pages/North%20East/North-East.aspx>

Vacancies by Sector

Unfilled vacancies due to skills shortages: North East



This chart shows the occupational sectors with the highest number of hard-to-fill vacancies that employers say are due to skills shortages.

Source: <https://nationalcareersservice.direct.gov.uk/advice/planning/LMIMaps/Pages/North%20East/North-East.aspx>

Vacancies by Sector

Sectors set to grow: North East



This chart shows the occupational sectors that are predicted to grow most over the next six years. The figures are based on the number of people forecast to work in each sector as a proportion of the predicted total numbers that will be employed in the region.

Source: <https://nationalcareersservice.direct.gov.uk/advice/planning/LMIMaps/Pages/North%20East/North-East.aspx>

Major STEM opportunities in NE

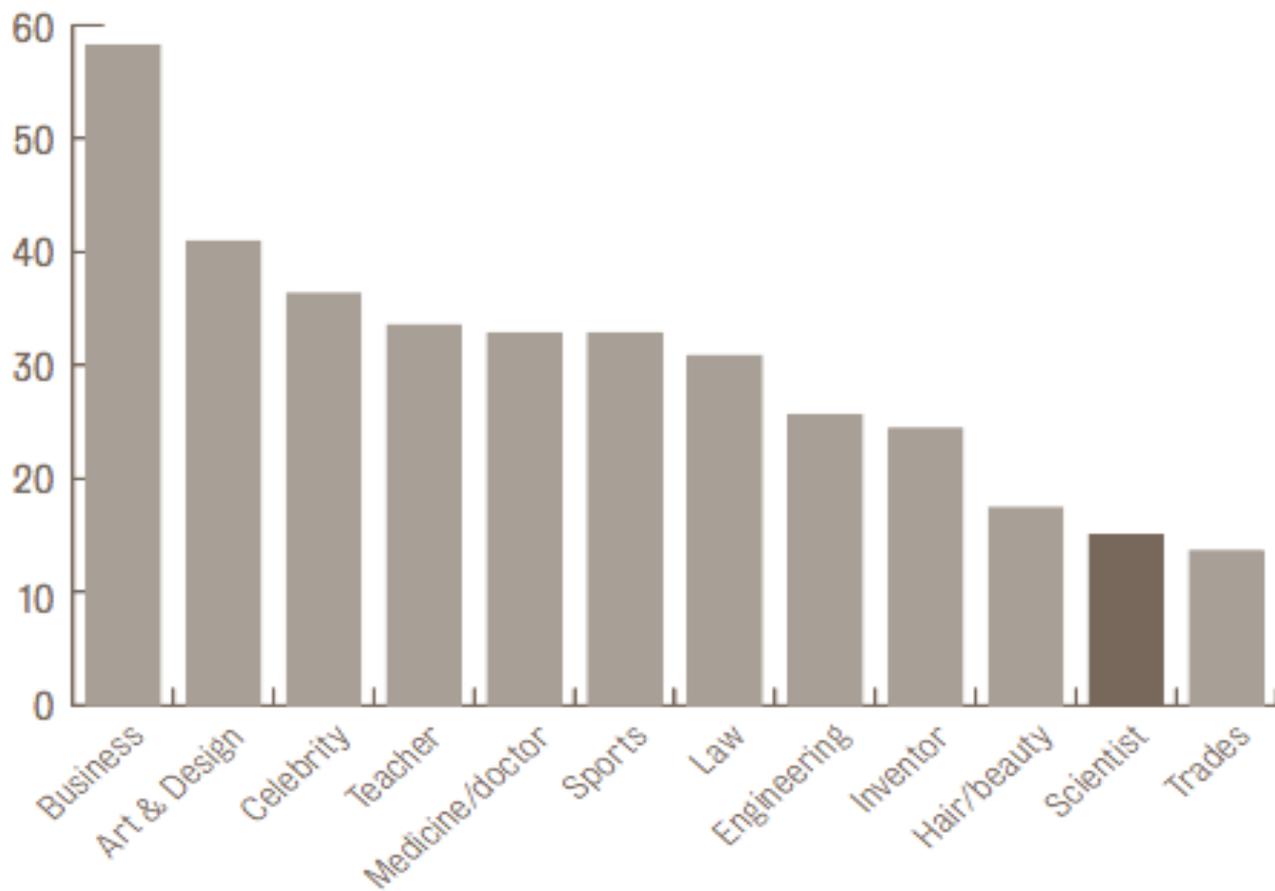
- Motor vehicle manufacture and supply chain
- Train manufacture and supply chain
- Healthcare
- Chemical industry
- Engineering (e.g. offshore wind)
- Food and drink manufacture

Source: <https://nationalcareersservice.direct.gov.uk/advice/planning/LMIMaps/Pages/North%20East/North-East.aspx>

Choices about STEM careers

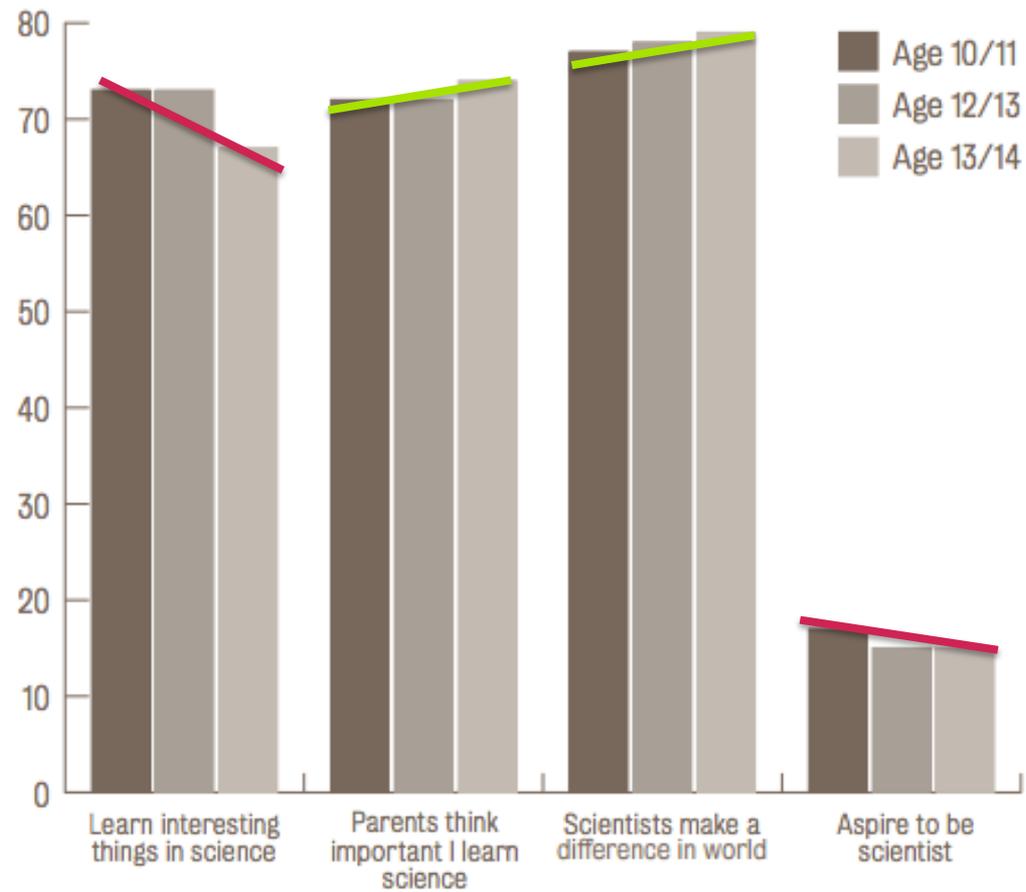
When do children make their decisions about their future careers?

PERCENTAGE OF YEAR 9 STUDENTS AGREEING
WOULD LIKE THIS JOB



<http://www.kcl.ac.uk/sspp/departments/education/research/aspires/aspires-final-report-december-2013.pdf>

COMPARISON OF SURVEY RESPONSES FROM
YEAR 6, YEAR 8 AND YEAR 9 STUDENTS
(% STRONGLY/AGREEING)



<http://www.kcl.ac.uk/sspp/departments/education/research/aspires/aspires-final-report-december-2013.pdf>

Science Capital

- Research by King's College – the ASPIRES project
- Students aged 10-14 are generally positive about school science
 - (but excitement falls with age across secondary)
- Students with high science capital are more likely to participate in STEM careers
- Linking learning to careers helps children choose STEM pathways
- Interventions need to be aimed at families, not just students.

<http://www.kcl.ac.uk/sspp/departments/education/research/aspires/aspires-final-report-december-2013.pdf>

Solutions

STEM ambassadors

STEM clubs



Audit of 'Science Capital', leading to a development plan.
Work with local employers.

Use your measures of destination to consider the impact.

Enthuse Partnerships

Two new Enthuse Partnerships this year in the North East (one Primary and one Secondary)

Both had a strong emphasis on CPD that helped develop the concept of 'Science Capital'

Funding is £12k across 2 years for a cluster of schools.

Enthuse funding supported by:

Department for Education, the Wellcome Trust, BAE Systems, Biochemical Society, BP, Institution of Engineering and Technology, Institution of Mechanical Engineers, Rolls-Royce, and the Royal Society of Chemistry.



Engaging learners

What is the order of these priorities for your STEM curriculum:

- Content
- Progress
- Engagement
- Managing behaviour?

(Where) does the teaching of skills feature?

FAMILY NOTICES

See family notices for the North East >

ChronicleLive

#iwill

You can make a difference where you live >

Most read

What's on >

News >

Business >

Newcastle United

Sunderland AFC

Property

In Your Area >

TRENDING

EU REFERENDUM

PLATE DAY

NEWCASTLE UNITED FC FIXTURES

THE HOPPINGS

EURO 2016

Sport >

TV News

Traffic & Travel

Food & Drink

» News » North East News » Education

North East schools 'face crisis' due to shortage of teachers as pupil numbers rise

06:30, 13 NOV 2015

BY JONATHAN WALKER

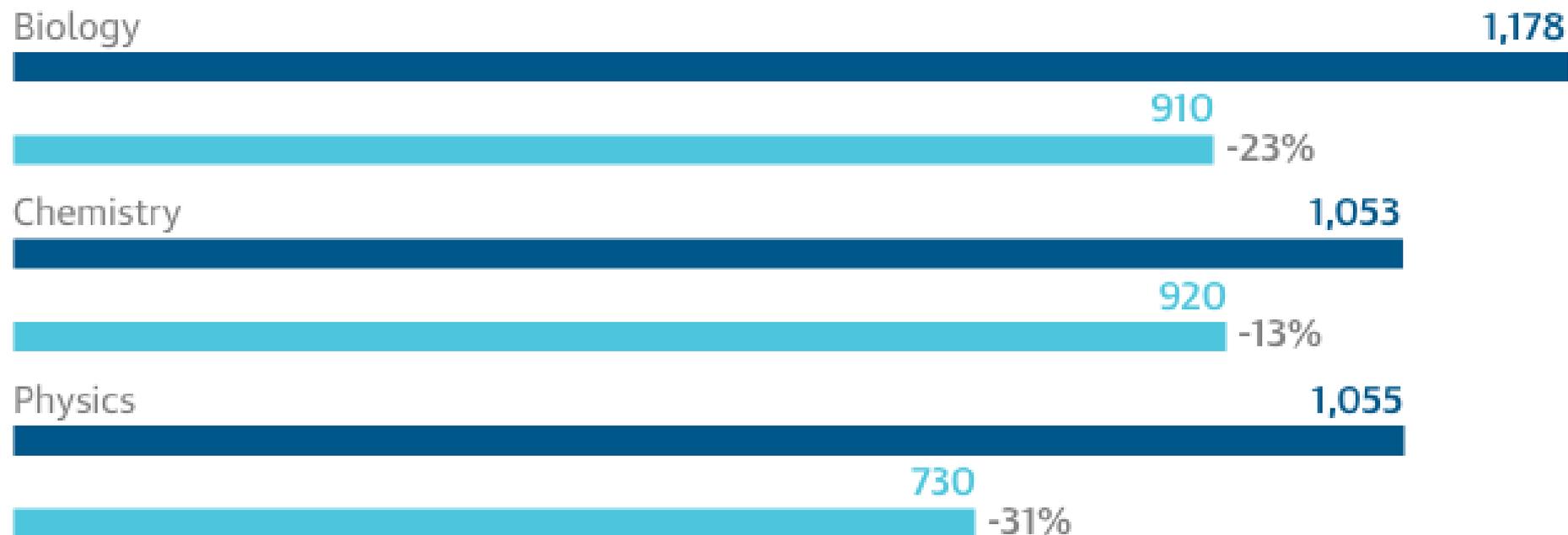
Gateshead MP Ian Mearns said schools were struggling to recruit enough staff to teach key subjects such as maths and science



Teacher shortages

Shortfall in trainee recruits for the 2015/16 school year

[Recruitment target](#) | [Recruited so far](#)



Guardian graphic

Source: TeachVac/UCAS/Guardian

The Guardian - Tuesday 15 September 2015

What encourages students to learn science?

“Young people were asked what had encouraged them to learn science and what had discouraged them:

Perceived teaching quality was the most common answer to both questions.

Encouragement – having a good teacher (58%)

Discouragement – having a bad teacher (43%)”

Wellcome Trust Monitor 2013

Teacher Professional Learning

When it comes to science, NSLN research shows that support and regular, high-quality continuing training helps prevent teachers leaving. “It increases teacher confidence and effectiveness, and our data clearly shows that when teachers get the right support they are happier and more likely to stay in the profession,” says Yvonne Baker, chief executive of the NSLN.

The Guardian - Tuesday 15 September 2015



Challenges

- Falling capacity for teaching Science/Mathematics, challenging for colleagues to support colleagues
- Recruitment of high quality teachers
- Ever decreasing budgets putting pressure on departmental and CPD budgets

Increasing capacity

- TSST Physics and Mathematics
(Teacher Subject Specialism Training)
- Increasing capacity in current workforce, encouraging returners and supporting/retraining non-specialists.
- Directory available at:
<https://www.gov.uk/guidance/teacher-subject-specialism-training-courses>

Effective CPD

- Ensure that your CPD is high-impact, evidence-based and includes subject specific CPD.

The effectiveness of science in both the primary and secondary schools visited was much more likely to be outstanding when teachers and subject leaders had received science-specific training.

However, most of the primary teachers had not received such training, and most of the science leaders in both phases had not received leadership training that was specific to science.

Maintaining curiosity in science (Executive Summary) November 2013

Impact on teaching and learning



Contact

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- Scheduled courses here: <https://www.stem.org.uk/cpd>
- Or tailored support on request
- Materials produced by the STEM teaching community at <https://www.stem.org.uk/resources>
- And much more....