



STEM Teacher Careers Information Survey

(Delivering effective careers advice about science, technology, engineering and mathematics: a teacher's survey)

Summary of key findings

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August 2011

We would like to acknowledge the support of the Specialist Schools and Academies Trust (SSAT), The Institute of Engineering and Technology (IET), the Institute of Physics (IoP), National Forum of Engineering Centres (NFEC) and Science, Technology, Engineering and Mathematics Network (STEMNET) who helped disseminate and/ or promote the electronic survey.

Fieldwork for this research project was conducted by EngineeringUK between 16th May and 17th June 2011 - 228 STEM teachers responded from across the UK.

Background

EngineeringUK provides a range of careers materials about engineering to young people and their influencers; we are constantly seeking ways to improve both the content of our resources and how we deliver these to our target audiences.

Currently, we deliver careers information via two key programmes: The Big Bang – the annual UK young scientists and engineers fair and Tomorrow’s Engineers – a regional programme of engineering activities. In both cases we have direct contact with young people. Feedback from our programmes has shown that young people are highly likely to turn to teachers to seek out information related to their career choices.

In the current climate of public sector cuts (where one-to-one careers advice in schools is not being readily provided effectively or continuously from age 11 to 16) EngineeringUK believes that young people are even more likely to turn to their subject and form teachers for careers information and advice.

With this in mind, a survey was undertaken to find out where teachers and young people seek out information about science, technology, engineering and maths (STEM) careers; and what sources they recommend to young people seeking information about STEM careers. The research looked specifically at the types of sources teachers prefer as well as the trusted resources and websites they already use.

This research will be used to inform how and where we provide STEM careers resources to teachers going forward. We will share this information with our partners to ensure that they too can target their resources most effectively.

Summary of key findings:

The 31 questions which made up the STEM teachers careers survey were devised to specifically provide us with a clear understanding of the views of these key influencers across three explicit issues:

- Where do teachers find careers information?
- What are the popular onsite or offsite enhancement and enrichment (E&E) activities?
- Are teachers aware of and engaged with STEM E&E activities?

The five key findings associated to these themes are below:

Are teachers aware of and engaged with STEM E&E activities?

1. Whilst the majority of teachers were aware of STEM E&E activities, there still remain a significant proportion of teachers (53%) who are yet to get involved in them.
 - Overall, 91% of the teachers questioned were aware of STEM E&E activities. Of those who were aware of STEM E&E activities 46% said they were involved, a further 23% of those aware were not involved in STEM E&E activities, but said they would like to be.

- When asked which type of STEM E&E activities, during and outside school/college teaching time that their school took part in; offsite activities (44%) were equally as popular as onsite activities (43%).
 - 64% of teachers use STEM E&E activities to develop the curriculum.
2. It takes teachers on average less than half a term to identify and get approval for onsite or offsite STEM E&E activities.
- Within the school/college the head of department (68%) and class teacher (59%) were responsible for identifying and selecting STEM E&E. However, the Headteacher/Principal (37%) followed by the Head of Department (31%) were the members of staff who provided the final approval.
 - When asked how long on average it took to get authorisation for an onsite or offsite STEM E&E activity, the majority of teachers said it took less than half a term.

What are the popular onsite and offsite E&E activities?

3. National Science and Engineering Week, STEM Clubs, local and national museums, The Big Bang UK Young Scientists and Engineers Fair and Smallpeice Residential Courses were the most popular STEM E&E activities that schools undertook.
- What the majority of teachers wanted from STEM E&E activities for their pupils was for them to enjoy themselves (90%) and to increase their interest in science and engineering (87%).

Onsite activities:

- During school/college time, the National Science and Engineering Week was the onsite STEM E&E activity schools/colleges were most engaged with (43%), followed by STEM Clubs (30%).
- Outside school/college time, the most popular onsite STEM E&E activity was STEM Clubs (30%).

Offsite activities:

- During school/college time, local and national museum visits were the offsite STEM E&E activity schools/colleges were most engaged with (44%), followed by The Big Bang UK Young Scientists and Engineers Fair (26%).
- Outside school/college time, the most popular offsite STEM E&E activity were the Smallpeice Residential Courses (19%).

Where do teachers find careers information?

4. Nine out of ten teachers agree that providing careers advice is part of their role.
 - Almost nine out of ten (87%) of teachers agreed that providing careers information and advice was part of their role.
 - Eight out of ten (79%) of teachers said they would answer the pupil based on their own knowledge and experience, followed by 74% who said that they would suggest a website that the pupil could look at. Teachers were least likely to refer a pupil to a careers library (27%).

5. Teachers unanimously prefer to use websites to search for STEM careers information and almost all recommend websites to pupils and parents with short leaflet/ flyers as their second preferred recommendation.
 - Almost nine out of ten teachers (87%) voted websites as the most popular type of media source for STEM careers information that they prefer to use. Posters (59%) were the most printed materials with magazines the least popular.
 - Websites (98%) were unanimously voted the most popular type of media source for STEM careers information that teachers recommend to pupils, followed by short leaflets/flyers (55%).
 - Websites (89%) were also voted the most popular type of media source for STEM careers information that teachers would recommend to parents, followed by short leaflets/flyers (64%).
 - The Times Educational Supplement (TES) was the magazine most regularly read by STEM teachers (59%).
 - Over nine out of ten (95%) teachers said that they would allow their pupils to access STEM careers information online within school/college teaching time.

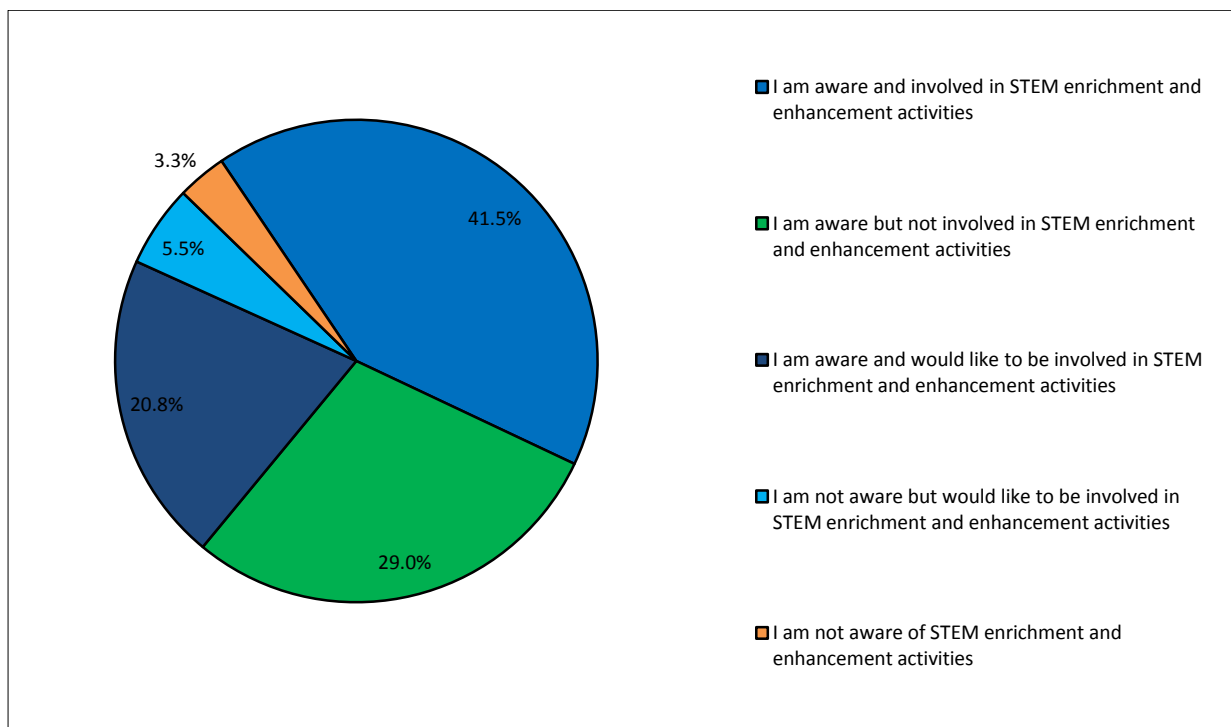
Responses by question:

STEM teachers awareness and participation of STEM E&E activities

Overall, 91% of the teachers questioned were aware of STEM E&E activities. Of those who were aware of STEM E&E activities 46% said they were involved, a further 23% of those aware were not involved in STEM E&E activities, but said they would like to be.

Two thirds (66%) of teachers said that their school/college took part in STEM E&E activities. When asked which type of STEM E&E activities, during and outside school/college teaching time, their school took part in, offsite activities (44%) were equally as popular as onsite activities (44%).

Fig.1: STEM teachers awareness and participation of STEM E&E activities



Base (all answering) 183

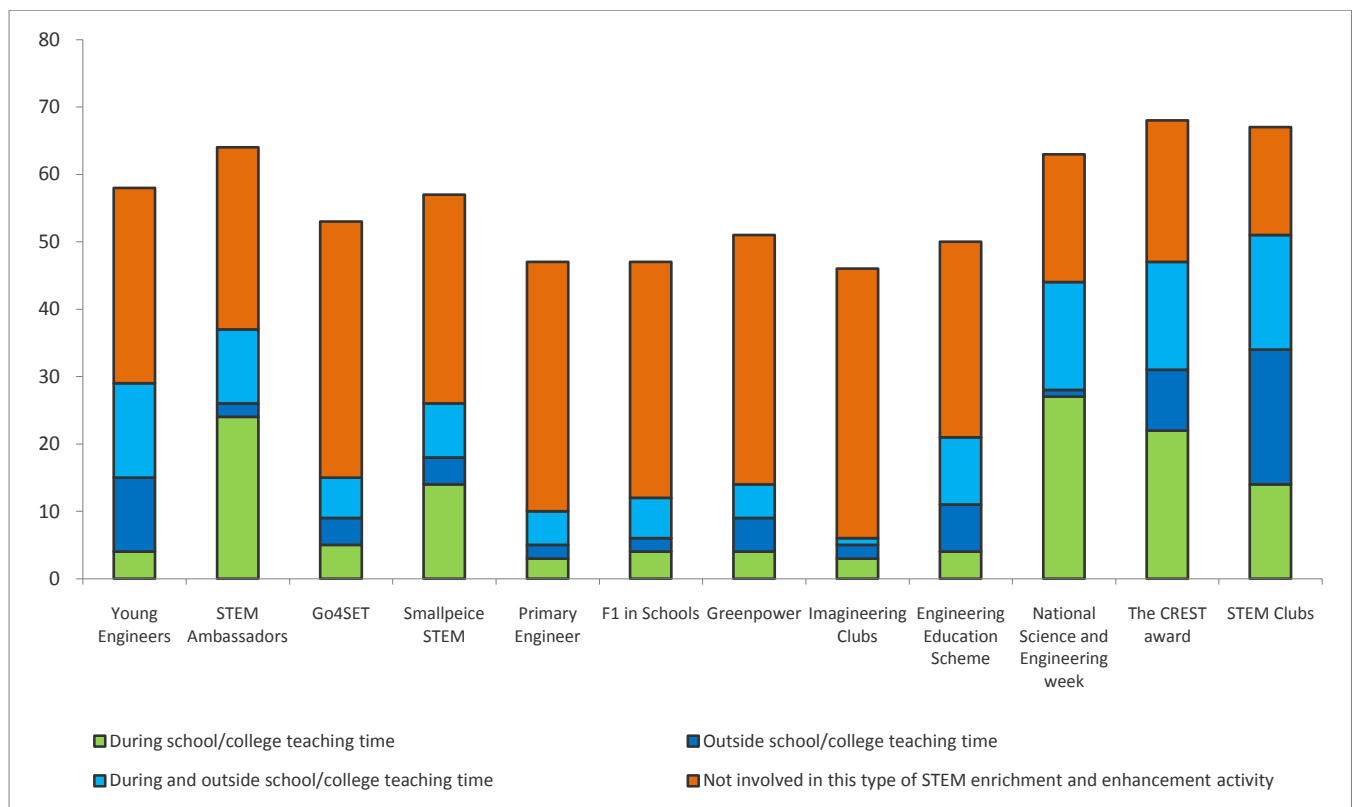
Onsite STEM E&E activity participation

When asked which onsite STEM E&E activities the school/college were engaged in, the four almost equally popular activities during and outside school/college teaching time were STEM Clubs (25%), National Science and Engineering Week (25%), Young Engineers (24%) and the Crest Award Scheme (24%).

During school/college time, the National Science and Engineering Week was the onsite STEM E&E activity schools/colleges were most engaged with (43%), followed by STEM Clubs (30%).

Outside school/college time, the most popular onsite STEM E&E activity was STEM Clubs (30%) followed by Young Engineers (19%).

Fig.2: Onsite STEM E&E activity participation



Base (all answering) 95

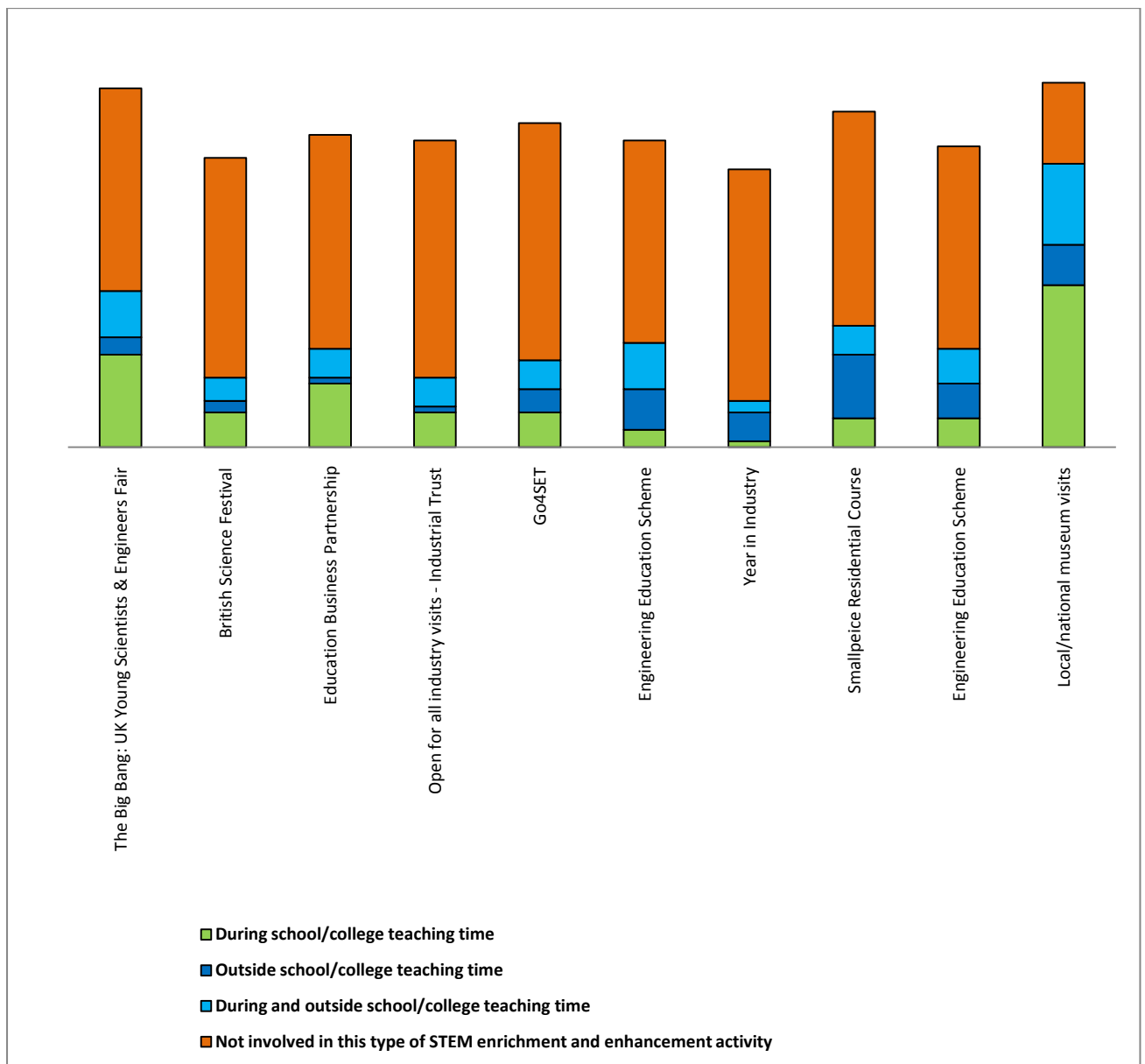
Offsite STEM E&E activity participation

When asked which offsite STEM E&E activities the school/college was engaged in, the most popular offsite activities during and outside school/college teaching time were local and national museum visits (22%), followed by the Engineering Education Scheme (15%).

During school/college time, local and national museum visits were the offsite STEM E&E activities schools/colleges were most engaged with (44%), followed by The Big Bang UK Young Scientists and Engineers Fair (25%).

Outside school/college time, the most popular offsite STEM E&E activity was the Smallpeice Residential Courses (19%).

Fig.3: Offsite STEM E&E activity participation



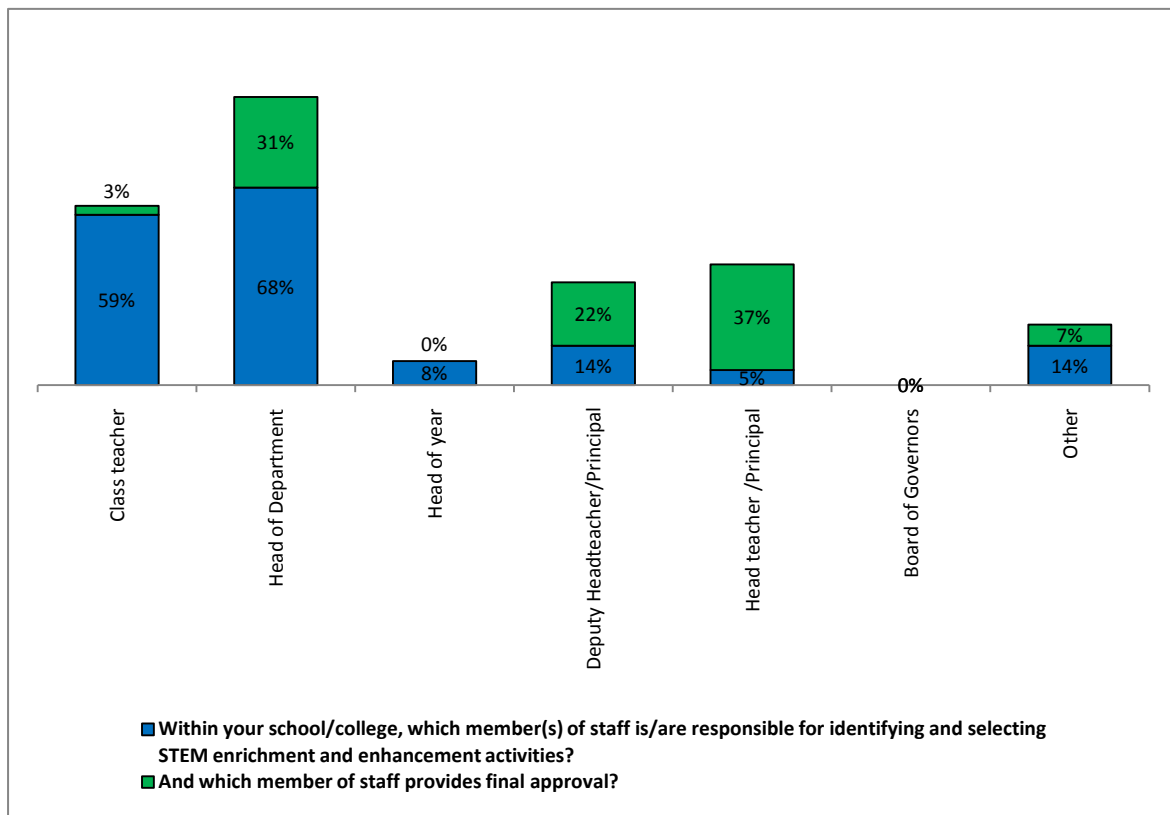
Base (all answering) 83

Responsibilities and time scales for identifying and authorising STEM E&E activities

Within the school/college the Head of Department (68%) and class teacher (59%) were responsible for identifying and selecting STEM E&E activities. However, the Headteacher/Principal (37%) followed by the Head of Department (31%) were the members of staff who provided the final approval.

When asked how long on average it took to get authorisation for an onsite or offsite STEM E&E activity, the majority of teachers said it took less than half a term. Just over a half (52%) of teachers said that it took less than half a term to authorise onsite activities, whilst 43% said it took less than half a term to authorise offsite activities.

Fig.4: Responsibilities and time scales for identifying and authorising STEM E&E activities



Base (all answering) 95

Teachers' expectations for their pupils from STEM E&E activities

What the majority of teachers wanted most from STEM E&E activities was for their pupils to enjoy themselves (90%) and to increase their interest in science and engineering (87%).

Media sources for STEM careers information that teachers prefer

Almost nine out of ten teachers (87%) voted websites as the most popular type of media source for STEM careers information that they prefer to use, followed by posters (59%). Social networking sites were voted the least preferred type of media source (8%) followed by magazines (26%).

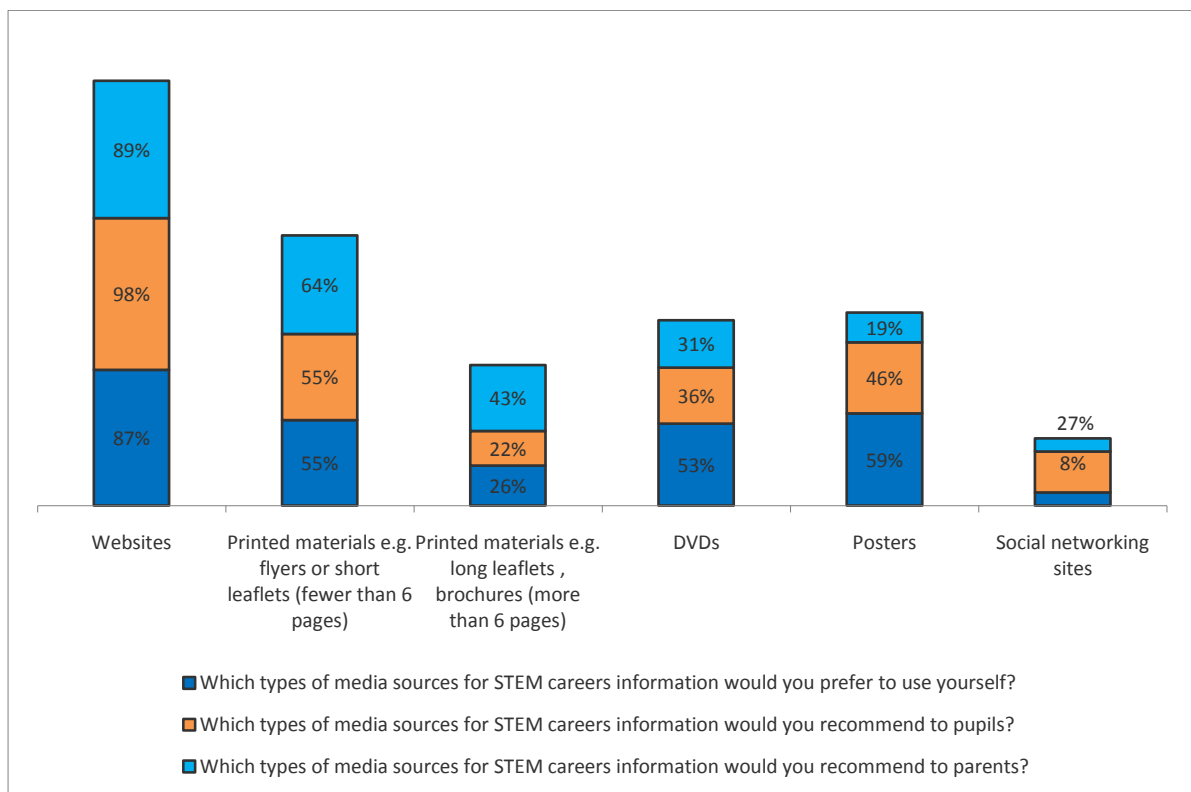
Media sources for STEM careers information that teachers recommend to pupils

Websites (98%) were almost unanimously voted the most popular type of media source for STEM careers information that teachers recommend to pupils, followed by short leaflets/flyers (55%). The media source that teachers least recommended to pupils for STEM careers information were magazines (22%) followed by social networking sites (27%).

Media sources for STEM careers information that teachers recommend to parents

Websites (89%) were also voted the most popular type of media source for STEM careers information that teachers would recommend to parents, followed by short leaflets/flyers (64%). The media source that teachers recommended the least to parents for STEM careers information were social networking sites (8%) followed by posters (19%).

Fig.5: Media sources for STEM careers information that teachers prefer to use themselves and refer to pupils or parents



Base (all answering) 167

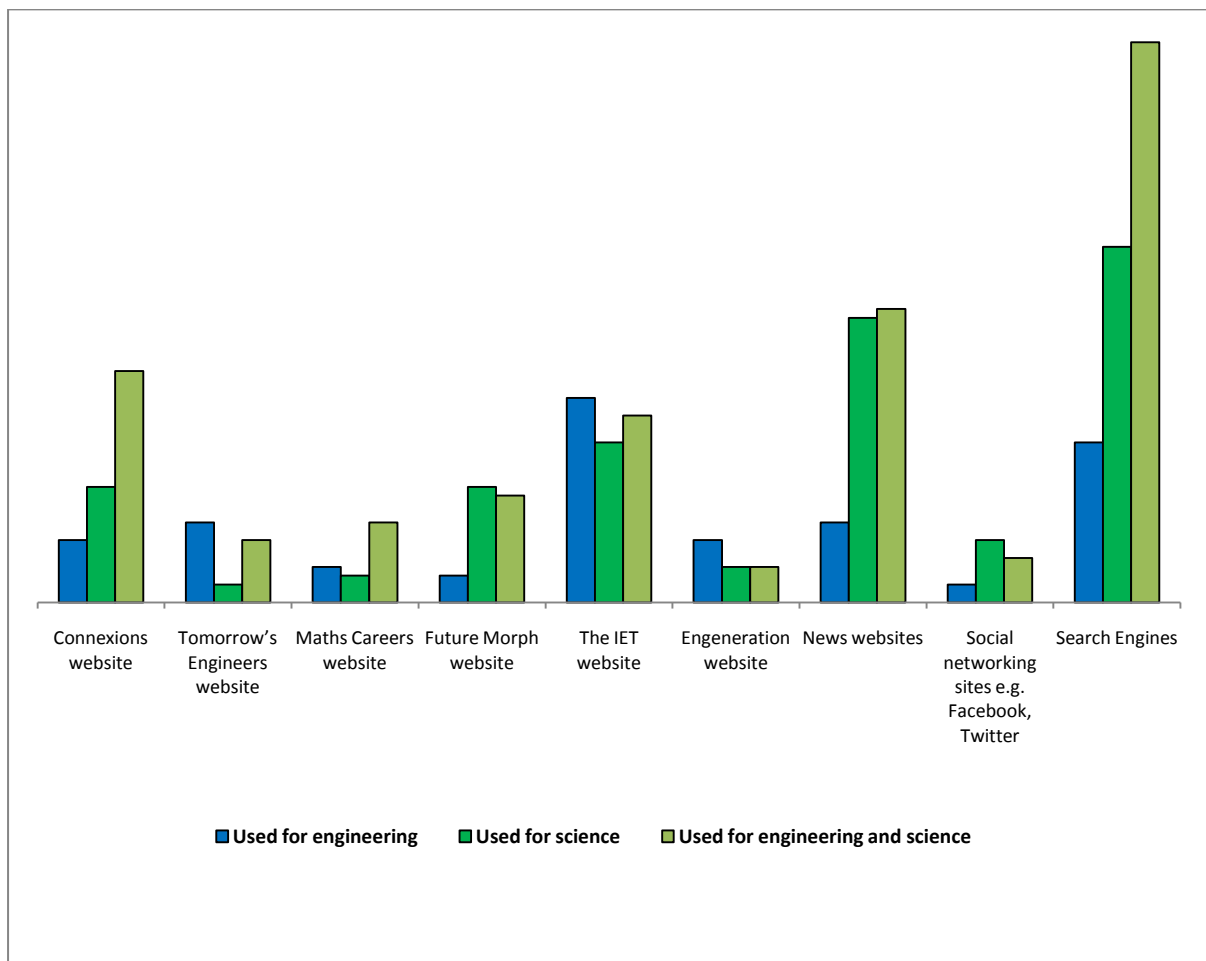
Websites that teachers use for careers related information on engineering and/or science

The IET (Institute of Engineering and Technology) website (17%)¹ was considered the most popular website used by teachers for careers information on engineering, followed by search engines (12%). The least popular website used by teachers for careers information on engineering was social networking sites (2%).

Search engines were the most popular website used by teachers for careers information on science (37%), followed by news websites (24%).

Search engines were also the most popular website used by teachers for careers information on science and engineering (43%), followed by news websites (25%).

Fig.6: Websites that teachers use for careers related information on engineering and/or science



Base (all answering) 153

¹ It should be noted that survey respondents were contacted via a number of communications channels including the IET's own schools database.

STEM magazines regularly read by STEM teachers

The Times Educational Supplement (TES) was the magazine most regularly read by STEM teachers (59%), followed by Physics World (35%) and New Scientist (29%).

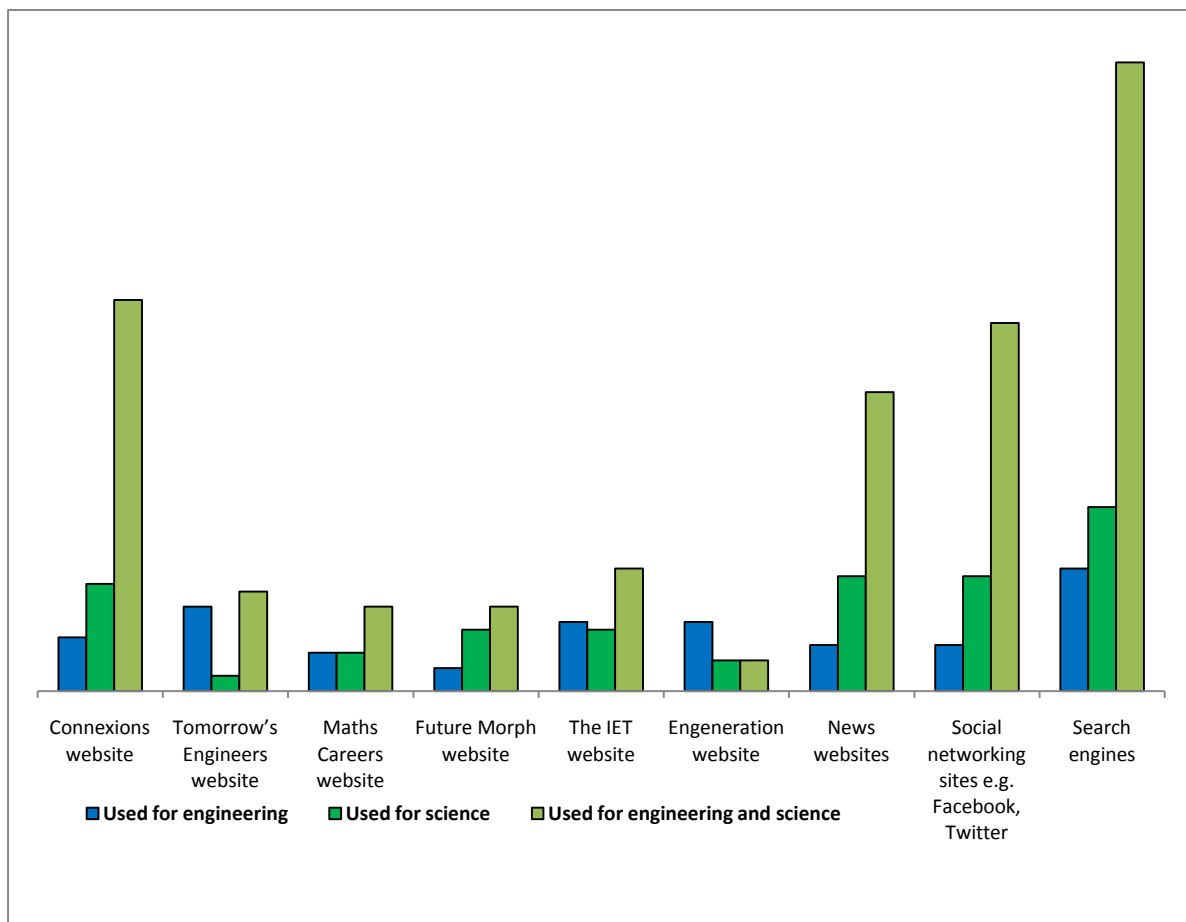
Social Media - STEM careers information on Facebook and online

Whilst 94% of teachers questioned were not aware that STEM careers information was available on Facebook; 95% of teachers said that they would allow their pupils to access STEM careers information online within school/college teaching time.

Websites that teachers believe are likely to be used by pupils/students for careers related information on engineering and/or science

Teachers considered that search engines were the most popular website that their pupils/students were most likely to use for careers information on engineering (12%), science (17%) and science and engineering (60%). Besides search engines, the Connexions website, was also considered a website that young people would likely use for careers information on engineering and science (42%).

Fig.7: Websites that teachers believe are likely to be used by pupils/students for careers related information on engineering and/or science



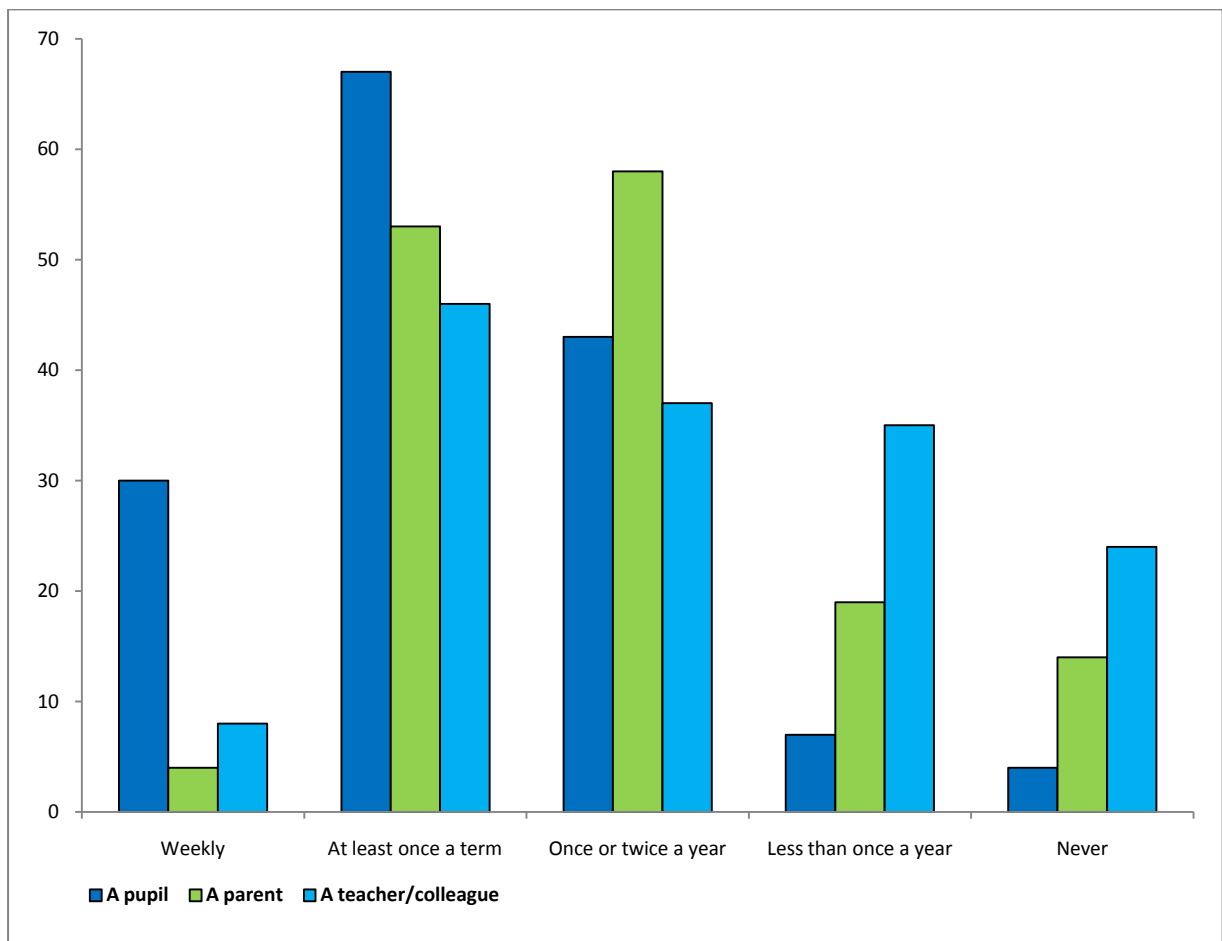
Base (all answering) 150

How often are teachers asked about careers information or advice by pupils, parents and colleagues?

The majority of teachers were asked by pupils and teachers/colleagues at least once a term about careers information (44% pupils and 31% teaching colleagues respectively). Teachers were less frequently asked about careers information by parents, around once or twice a year (39%).

Teachers were more likely to be asked about careers information on a weekly basis by pupils (19%), than by their teaching colleagues (5%) or parents (3%).

Fig.8: How often are teachers asked about careers information or advice by pupils, parents and colleagues?

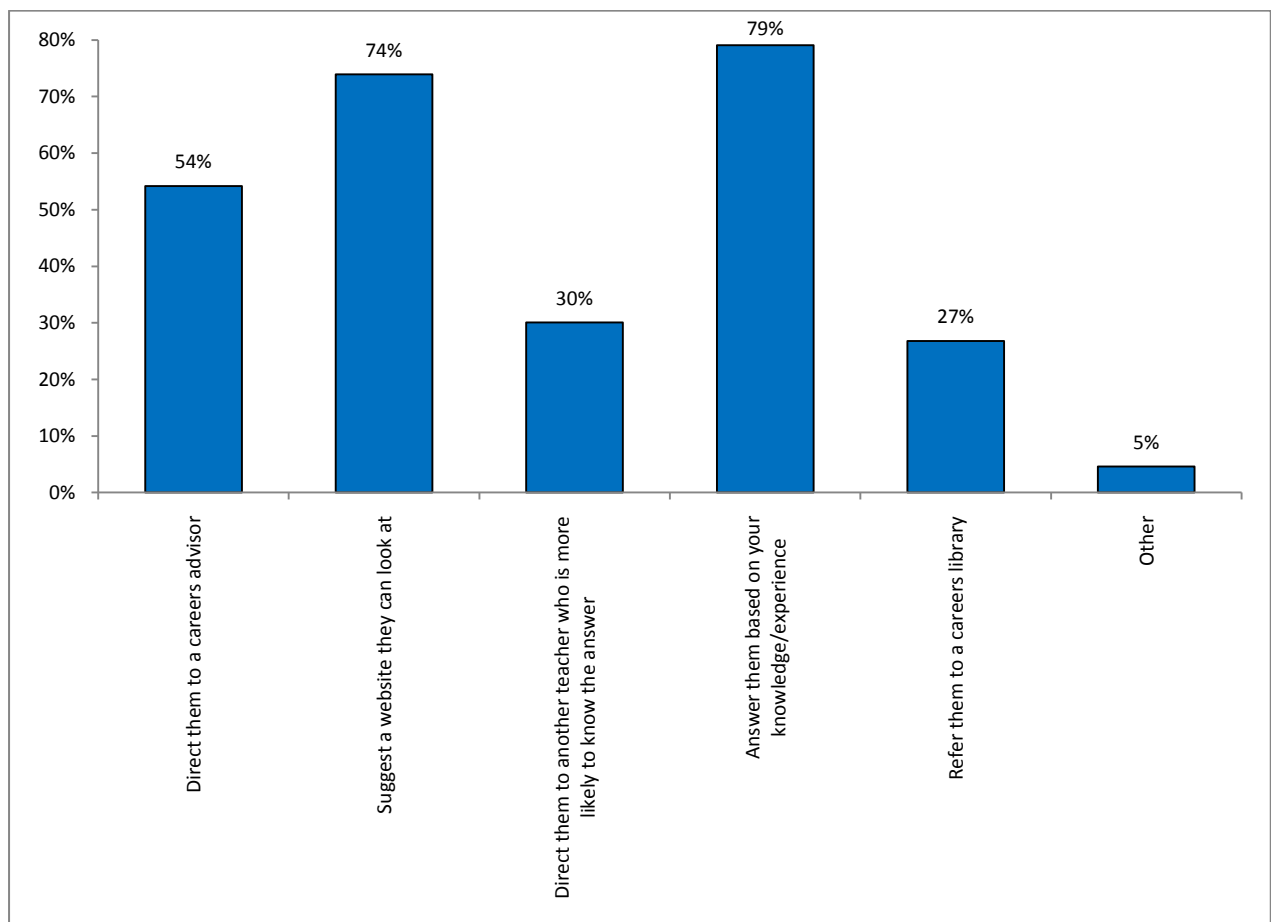


Base (all answering) 151

What teachers are most likely to do if asked by a pupil for STEM careers information or advice

Eight out of ten (79%) teachers said they would answer the pupil based on their own knowledge and experience, followed by 74% who said that they would suggest a website that the pupil could look at. Teachers were least likely to refer a pupil to a careers library (27%).

Fig.9: What teachers are most likely to do if asked by a pupil for STEM careers information or advice



Base (all answering) 153

How teachers use different career learning activities in the classroom

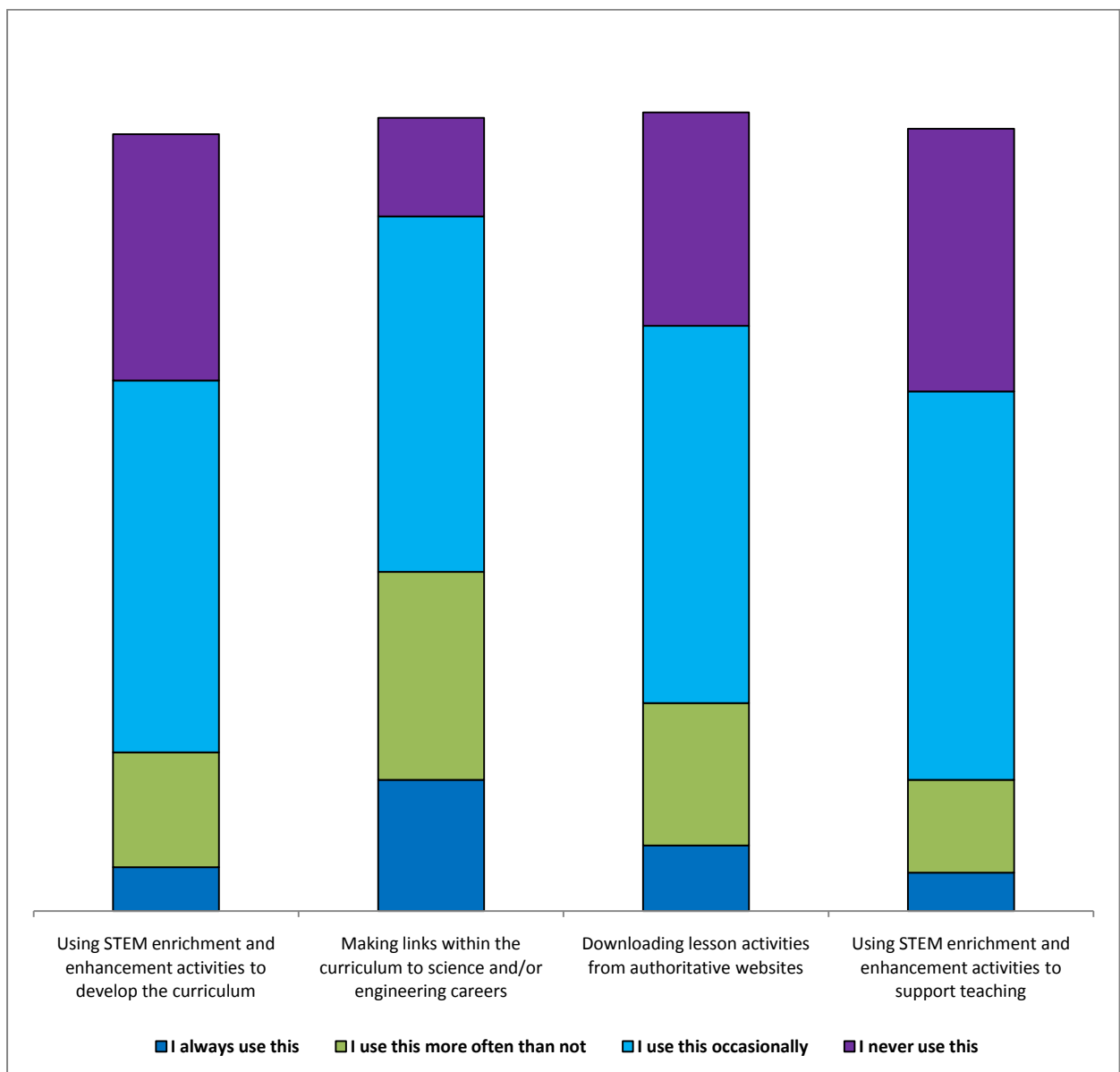
64% of teachers were using STEM E&E activities to develop the curriculum; however 48% of teachers only use this occasionally and of these just 6% of teachers always use STEM E&E activities to develop the curriculum.

88% of teachers make links within the curriculum to science and/or engineering careers, the majority (45%) of teachers do this occasionally compared to 17% of teachers who always do this.

Almost three quarters (73%) of teachers download lesson activities from authoritative websites, 47% of teachers do this occasionally, 18% of teachers do this more often than not and 8% claim to always do this.

66% of teachers use STEM E&E activities to support their learning, 50% of teachers do this occasionally, whilst 12% of teachers do this more often than not and 5% of teachers claim to always do this.

Fig.10: How teachers use different career learning activities in the classroom



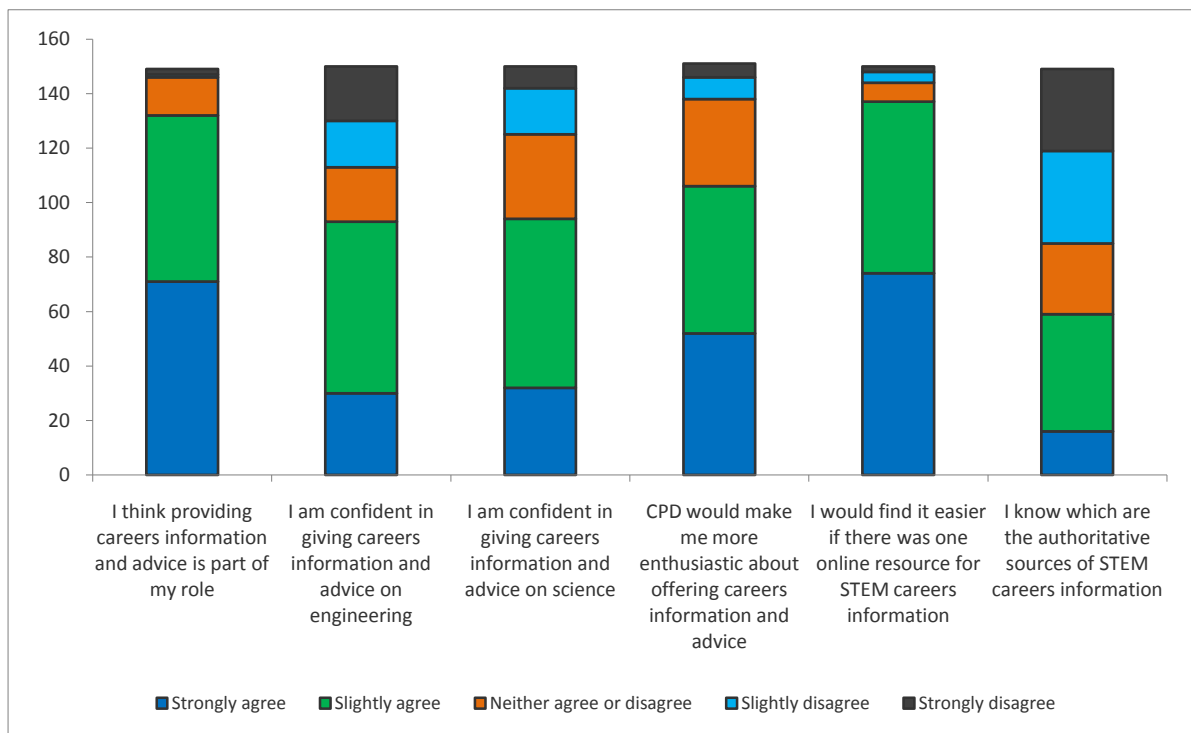
Base (all answering) 152

Teachers' attitudes towards careers advice provision

Almost nine out of ten (87%) teachers agreed that providing careers information and advice was part of their role, only 1% of teachers disagreed strongly with this. Over two thirds of teachers were confident in giving careers information and advice on engineering (62%) and science (63%), however, more teachers were more confident in providing careers advice for science (95%) than engineering (87%).

70% of teachers agreed that continuous professional development (CPD) would make them more enthusiastic about offering careers information and advice, and 91% of teachers said it would be easier if there was a single online resource for STEM careers information.

Fig.11: Teachers' attitudes towards careers advice provision



Base (all answering) 152

Survey Demographics

Are you?		
Answer Options	Response Percent	Response Count
Male	50.0%	78
Female	50.0%	78
<i>answered question</i>		156

In which country do you primarily work?		
Answer Options	Response Percent	Response Count
England	78.8%	123
Wales	0.6%	1
Scotland	19.2%	30
Northern Ireland	1.3%	2
<i>answered question</i>		156

Which of the following do you teach?		
Answer Options	Response Percent	Response Count
Physics	49.8%	113
Chemistry	21.6%	49
Biology	22.9%	52
Science	38.8%	88
Design & Technology	19.8%	45
Engineering	15.0%	34
Mathematics	16.7%	38
None of the above	7.9%	18
<i>answered question</i>		227

Please select the type of school/college that you teach in		
Answer Options	Response Percent	Response Count
Academy	14.4%	26
Independent school	16.0%	29
Maintained school	21.5%	39
Specialist school	15.5%	28
Selective/Grammar school	2.8%	5
Faith school	3.3%	6
Sixth form/College	8.3%	15
Other	18.2%	33
Please specify		51
<i>answered question</i>		181

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