



WISE

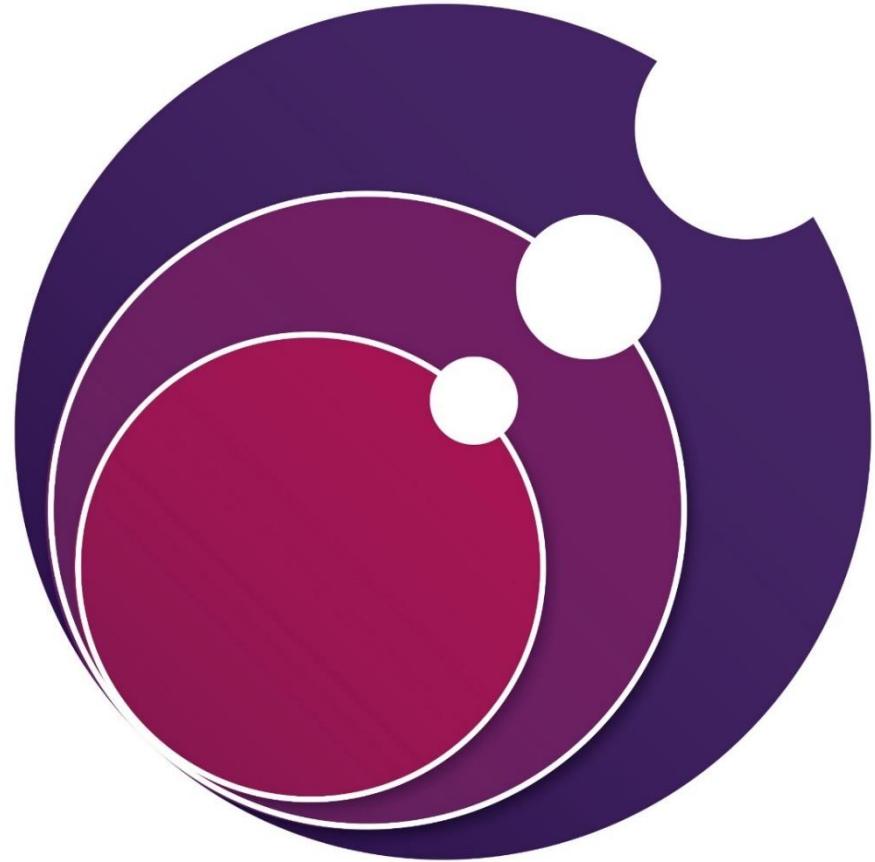
Women in Science & Engineering

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WISE

Campaign

- What we do
- The Facts
- People Like Me



WISE



Gender parity in the UK's scientific, technology and engineering workforce – from classroom to boardroom.

What we do

- WISE enables and energises people in business, industry and education to increase the participation, contribution and success of women in science, technology, engineering and mathematics (STEM).



What we do



- Consultancy
- Training
- WISE Awards
- WISE Conference
- WISE Projects
- Inspiration
- Resources
- Events
- News



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WISE members



- Corporate



- Educational



- Organisations



- Individual





The Facts

- › **GCSE's – Girls outperform boys in STEM**
- › **A- Level – Only 18% of girls take any STEM subject**
- › **Apprenticeships – 5.5% completed STEM apprenticeship**
- › **University – Only 24% of female graduates in core STEM subjects**
- › **Workforce – 21% of women in core STEM occupations**
- › **Boards – STEM FTSE companies –not much progress**



Engineering skills crisis

- An ageing workforce
- Low supply of individuals into engineering occupations
- Engineering also suffers from significant under-representation of women and ethnic minority groups.
- Poor perceptions
- Lack of interest



Lack of basic confidence





Gender stereotypes





Is the national science curriculum failing?

Research shows that students studying 'triple science' GCSE (separate biology, chemistry and physics) are more likely than those studying combined science to continue science study at A-level and to achieve higher grades having done so.

Entry numbers for the separate sciences are increasing, whilst entry to 'additional' science is decreasing – so why are we still teaching science as a single subject?



Risks in working with young people

It is easy to be influenced:

- › Bias in assessment of students' aptitude for science (Spear, M., 1987)
- › The biasing influence of pupil sex in a science marking exercise. In A. Kelly (Ed.), *Science for Girls?* (pp. 46-51). Milton Keynes: Open University Press.

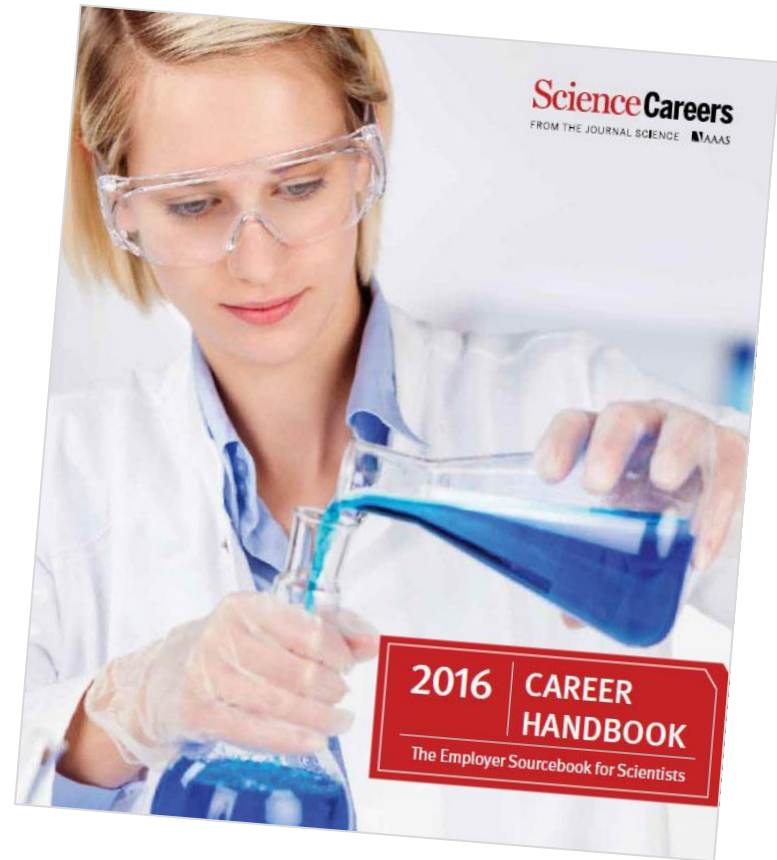
Teachers are shown to assign higher marks to boys for the same quality work!

Teachers have been known to recommend arts subjects as more suitable for girls



Careers advice is also crucial yet lacking...

- Most young people form their attitudes to science between the ages of 10 -14 - 'critical period'
- But at this point in time they receive little or no careers education to support or inform their ideas
- Less than one in 20 girls considers a career in STEM compared to one in five boys





What are we missing??

Apprenticeship	Male	Female	%
Industrial applications	8370	950	10%
Construction skills	7610	130	1.7%
Engineering	7410	230	3%
IT and Telecomms	4440	490	10%

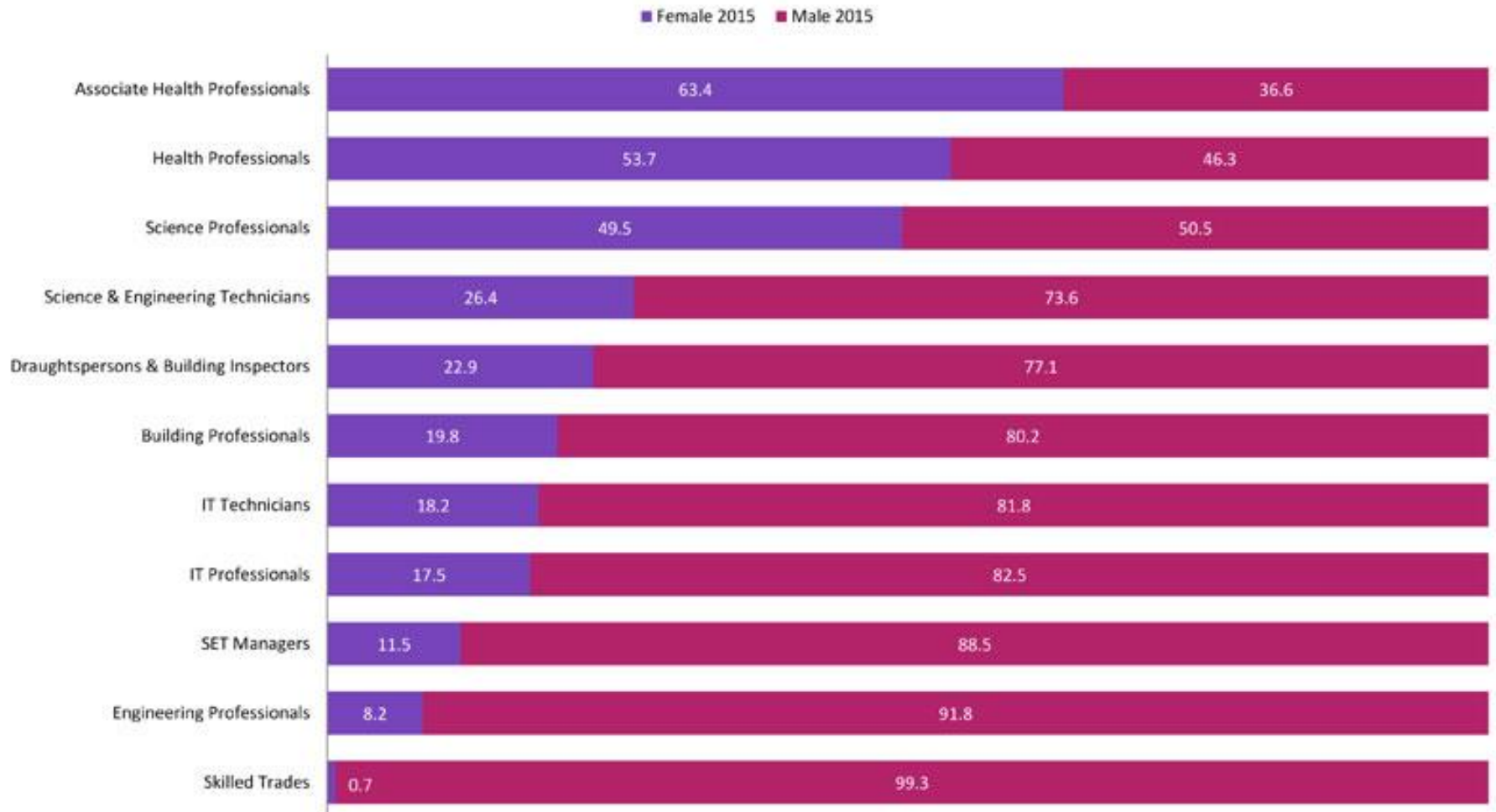


Where are the women??

Apprenticeship	Male	Female	%
Childcare	1390	22,930	94%
Hair and beauty	1220	13,450	92%
Health and social care	11350	58,730	84%
Business admin	12,790	31,400	71%

Leading to a gendered workforce

Females & Males in UK STEM Occupation Groups





It's time to challenge the myths



MYTH:

Bias no longer exists



MYTH:

Stereotypes don't have an impact



MYTH:

Girls have to sink or swim



MYTH:

What I say doesn't matter

Implications



Education: We urgently need to persuade more girls to choose core STEM subjects at 16 and beyond to make progress towards gender parity in the STEM workforce

Impact of technology

- › 4th Industrial revolution
- › World economic forum suggests that impact on jobs traditionally done by women will be significantly greater than for men – 4 Male jobs to every 1 created, compared to 20 female jobs per 1 new job created.
- › Digital literacy, numeracy, creativity; social and communication skills – great potential for women, however, they will miss out if they do not have maths, science or technology qualifications which give them the analytical skills required.

Solution

- Doing the same things as we have always done will not be good enough, evidenced-based solutions are key:
 - ✓ WISE People Like Me
 - ✓ WISE Apprenticeship Toolkit
 - ✓ WISE Ten steps framework



a
Campaign
by



People Like Me - Research

- Girls more likely to create and articulate their self identity using adjectives
- Traditionally, science careers outreach and case studies focus on what engineers 'DO' using verbs
- Conflict between self-identity therefore 'not for people like me'
- Awareness of key influencers

Introductory activity

- On a piece of paper, write down your name and address.
- Then, using your “wrong” hand (i.e. the other one!) write out your name and address again.

What was it like?

People Like Me - Research

- We can't change girls but we can change the way we present STEM to them.
- If girls don't know what is out there, how can they make an informed choice about whether or not STEM is for them?
 - We don't want all girls to become scientists and engineers – we want them to find out where they will be happy and successful working.

Solution

Show girls:

- Better prospects
- Career Choice
- Happy
- Successful

People Like Me Method



- A quiz
- Analysis of choices
- Result
- Job match and choices
- Role Models
- Mums and daughters session

1. Explorer	Likes to be the first to know something and understand why and how things happen
2. Investigator	works things out
3. Developer	<i>translates ideas into products</i>
4. Service Provider	Likes to deliver what other people need
5. Regulator	Likes things to be fair, honest and safe.
6. Entrepreneur	Likes to make things happen.
7. Communicator	Likes to engage with different audiences and languages.
8. Trainer	Likes to support others to understand new ideas.
9. Persuader	Likes to understand what will appeal to potential customers.
10. Supporter	Likes to find ways to help people get what they need.
11. Manager	Organised and good motivator.
12. Policy Maker	Diplomatic and conscientious

Where are people employed?

UK workforce = almost 30 million people

20% employed in science roles = 6 million people

Biggest areas **now**:

- › **Product design and development** 54% of workforce is science qualified
- › **Education** 46% of workforce is science qualified
- › **Digital media** 45% of workforce is science qualified
- › **Health** 30% of workforce is science qualified
- › **Consultancy** 25% of workforce is science qualified

What to study



Maths, physics, chemistry, biology, geology, geophysics, geochemistry, chemical engineering, pharmacy, genetics, bioinformatics, computer science, acoustics, electronics, electrical engineering, environmental engineering, cybernetics/robotics, astronomy, civil engineering, construction management, mechanical engineering, materials science, plant science, food biosciences, soil science, zoology, marine biology, meteorology, satellite technology, production management, land management, product design...

... it doesn't matter what you study!

What could you earn?

The **average** UK annual salary is **£25,000**

The **minimum** wage is a salary of **£14,000**

(N.B. you only receive about $\frac{3}{4}$ of the total because of taxes)

What is the average house price or monthly rent in your area?

What could you afford if you earned these salaries?

What could you earn?



Table 13.0:

Average starting salary for graduates by subject area
(2012/13) - UK domiciled¹¹⁴⁷

	Mean		Mean
Medicine and dentistry	£31,853	Social studies	£21,482
Engineering and technology	£26,536	Physical sciences	£21,073
Business and administrative studies	£25,230	Law	£19,999
Veterinary science	£24,620	Agriculture and related subjects	£18,102
Architecture, building and planning	£23,499	Historical and philosophical studies	£17,945
Subjects allied to medicine	£23,191	Biological sciences	£17,511
Mathematical sciences	£22,975	Languages	£16,788
Computer science	£22,817	Mass communications and documentation	£16,353
Education	£22,471	Creative arts and design	£14,363
Combined subjects	£22,289	Average for all graduates	£21,725

Source: HESA/Destination of Leavers from Higher Education bespoke data request

Key points to remember

The needs of girls: We want them to keep their options open, we want them to fit in. Girls want to see the point of what they are studying or doing.

- **The concerns of mothers:** To see their daughters happy and successful, which leads them to recommend jobs they are already familiar with – excluding many STEM sectors.
- **Girls AND their parents** need to see STEM subjects as a stepping stone into jobs and careers ‘for people like me’

People Like Me – sector packs



People Like Me - construction- opportunities to get involved

[Find out more:](https://www.wisecampaign.org.uk/about-us/wise-projects/people-like-me/people-like-me-bespoke-packs)

<https://www.wisecampaign.org.uk/about-us/wise-projects/people-like-me/people-like-me-bespoke-packs>

People Like Me – Training



<https://www.wisecampaign.org.uk/training/people-like-me/training-for-companies>