

Getting the balance right
How women are the under-utilised resource

Become an apprentice
The alternative way to train that gives you real insight

Women in boardrooms
The report that reveals the UK's weakness

MEDIA PLANET

No. 4 / June '11

WOMEN IN SET

4

TIPS TO

ACHIEVE IN SCIENCE, ENGINEERING AND TECHNOLOGY

The real women storming the sector
and conquering the stereotypes

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CHALLENGES

Secretary of State for Business, Innovation and Skills Dr Vince Cable says women's representation in boardrooms is increasing, but female applications to study engineering and the physical sciences are still surprisingly low

The boardroom is catching up, but engineering remains a problem

In my contribution to the 2010 Women in Science, Engineering and Technology (SET) report, I raised concerns about the under-representation of women on the boards of FTSE 100 companies and the ongoing gender pay gap for science and technology professionals. I also insisted that having more female scientists and engineers in the workforce - whether new recruits or women returning to industry - is very much in the interest of the UK economy.

Lord Davies' review into women on boards generated a record number of responses. He has subsequently challenged companies to reveal targets for the number of women on their boards by 2013 and 2015, and to set out how they plan to meet them.

Since the review was published, one fifth of all FTSE 100 board appointees have been women, and the number of all-male boards has fallen from 21 to 14. Although we cannot claim direct responsibility for this small-yet-encouraging improve-

ment, we hope that it represents the shape of things to come.

The Government has also committed to extending the right to request flexible working to all employees, and is currently consulting on how best to achieve this. Extending this right will result in more people working and help to dispel the myth that people who work flexibly are somehow not as committed to their jobs.

Readers of a similar age to me will no doubt recognise a significant shift in attitudes over a much longer period: on the part of many women who accept no obstacles to pursuing the career of their choice and of many employers whose prime concern is recruiting the very best talent.

At the Big Bang Fair in March, I saw girls participating across the board - with Hannah Eastwood, a first-year undergraduate at Bristol, being recognised as UK Young Scientist of the Year, a female first. Hannah has devised a method to remove chromium from tap water - a discovery of enormous poten-



Dr Vince Cable
Secretary of State for Business,
Innovation and Skills

"The Government has also committed to extending the right to request flexible working to all employees"

tial significance to the steel industry, among others.

More and more women are taking degrees in the biological and veterinary sciences, and in medicine. Yet we must focus, like Marie Curie, on what "remains to be done". In particular, women still lag a long way behind men in applying to read engineering and the physical sciences.

My department supports several schemes to raise the profile of careers in SET - among them STEMNET, STEM ambassadors, and National Science and Engineering Week. Most recently, we have asked the Royal Academy of Engineering to develop a diversity programme, working with its members and partners to address various issues, including the recruitment of women.

By the time of the next report, I hope that through our collective efforts - in business and education, through professional bodies and government itself - we will have further progress to celebrate.



WE RECOMMEND



Diana Brightmore-Armour
CEO, Corporate
Banking, Lloyds

PAGE 12

"When you've been held at gunpoint, the UK's corporate world is not that frightening"

MEDIA
PLANET

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NEWS

OUTDATED ATTITUDES PERSIST

Question: Has progress been made in getting more women into STEM careers?

Answer: Stereotypes are being broken down, but workplace cultures are slow to change

The scientific community has done a lot of work to attract more women into STEM (Science, Technology, Engineering and Maths) professions, but one expert says the workplace does not always match the image projected.

Annette Williams, director of the UKRC, a public body that fights to increase the representation of women in STEM careers, said: "We are good at giving out contradictory messages. The STEM community has wised up to the need to promote themselves well. For example, it now presents gender-neutral websites, such as Future Morph, which show images of females and ethnic minorities enjoying STEM careers. As a result, a lot of gender stereotypes are being removed.

"But we still find outdated attitudes in parts of the engineering and technology sectors. A careers adviser might say, 'Look at this fantastic apprenticeship', but the young woman is then treated abysmally at interview. We get such contradictions all the time."

Some STEM office cultures are so offputting they dissuade women from continuing their careers. "It's not enough to look at recruitment alone, we must also look at retention," Williams says. "Outdated attitudes have to be tackled. Few engineering firms offer flexible or part-time working, there are still pay gaps, and some women are put off by the 'boys' club' atmosphere."

Progress is slow. One in 20 working women are employed in a SET occupation compared to nearly one

in three working men and only 8 per cent of engineers are women. And recent funding cuts do not help. The Government has cut the UKRC's funding, and slashed the budget for careers advice. However, there are reasons to be optimistic.

Hope for the future

The collapse of the banking sector has made finance less attractive, making women more likely to consider STEM careers. And flexible working legislation, which came into effect on 1 April, allows parents of children under 18 to request flexible working patterns.

"This is an important step, but we have to be careful not to reinforce stereotypes," said Williams. "It's not only women who want flexible or part-time work. Real change will come when a lot of men want part-time work - for paternity leave, or to look after elderly relatives. We are already seeing an increase in men who understand the value women bring to the workplace and are championing change. This is a good sign."



Annette Williams
Director, UKRC

TIP
1
WORK ON RETENTION



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"Where will our knowledge take you?"



FIGHTING STEREOTYPES
Although work is being done to encourage women into science and engineering careers, more still needs to be done to keep them there
PHOTO: RGERHARDT/SHUTTERSTOCK.COM

Engineering a return to the laboratory

An extensive support network helped Caroline Graham build up her skills and confidence after a long career gap, and she has now returned to high-level research

When mechanical engineer Caroline Graham was working at the box office of her local theatre she little suspected she would soon return to the workplace after an eight-year career gap, as a researcher at Heriot-Watt University.

Caroline didn't think she had the confidence or skills to go back to high-level research, but support from the Scottish Resource Centre, the UKRC and the Daphne Jackson Trust convinced her otherwise.

After her long break to look after her two children, Caroline had begun to think about what she wanted to do when the younger of her two sons started school.

"I saw an ad for a trainee mechanical technician in a local paper, but I didn't think I would be able to go back at the same level," she said.



Caroline Graham
Mechanical engineer

Getting her confidence back

But the extensive support network helped her regain her confidence. She enrolled on the Scottish Resource Centre for Women in SET's (SRC) course for returners, which was run in conjunction with the Open University. She said: "The course was great. It had been more than 10 years since I'd applied for a job and it helped me develop a good CV."

Caroline also attended SRC workshops on interviews, self-marketing, networking and goal-setting.

Successful return

Once she was feeling more confident, Caroline applied to the Daphne Jackson Trust, which offers fellowships to women returning to SET roles. She started a Daphne Jackson Fellowship in December 2009 at Heriot-Watt University, sponsored by the Royal Academy of Engineering, and is now making a successful return.

Her project involves investigating the non-linear elasto-plastic behaviour of solder material and soldered joints. She is also attending internal lectures, seminars and short courses.

DAVID SMITH

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Levelling the playing field

The Daphne Jackson Trust helps women scientists who have taken a career break to update their skills before they return to work

Many women wanting to return to work - especially mothers of young children or carers for elderly relatives - struggle to find part-time and flexible positions.

The problem for highly qualified SET professionals is their field has rapidly moved on and they need to update skills to return at the same level. There is a danger their talents, plus the money and time spent in their training, is wasted.

The Daphne Jackson Trust is a charitable organisation offering flexible, part-time paid fellowships in universities and other research establishments. It helps female SET professionals return to careers after a break of two or more years.

The Trust offers two-year part-time paid fellowships at a UK university or industrial R&D laboratory. The Trust has a 96 per cent success rate in returning fellows to SET careers.

The University of Aberdeen currently has a pos available in Astronomy or an associated area, with the aid of a Royal Astronomical Society-funded Fellowship, and an opportunity in any SET field. Details are at www.daphnejackson.org.

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C
collaborative partnerships

N
networks of interaction

I
intellectual capital

C
careers in research

E
excellence in knowledge

E
expertise for innovation



E
executive decisions



Q
quality of work

G
governance structure

U
unbiased knowledge

E
evidence & explanation

A
assessment of ability

N
norms & narratives

L
leadership & management

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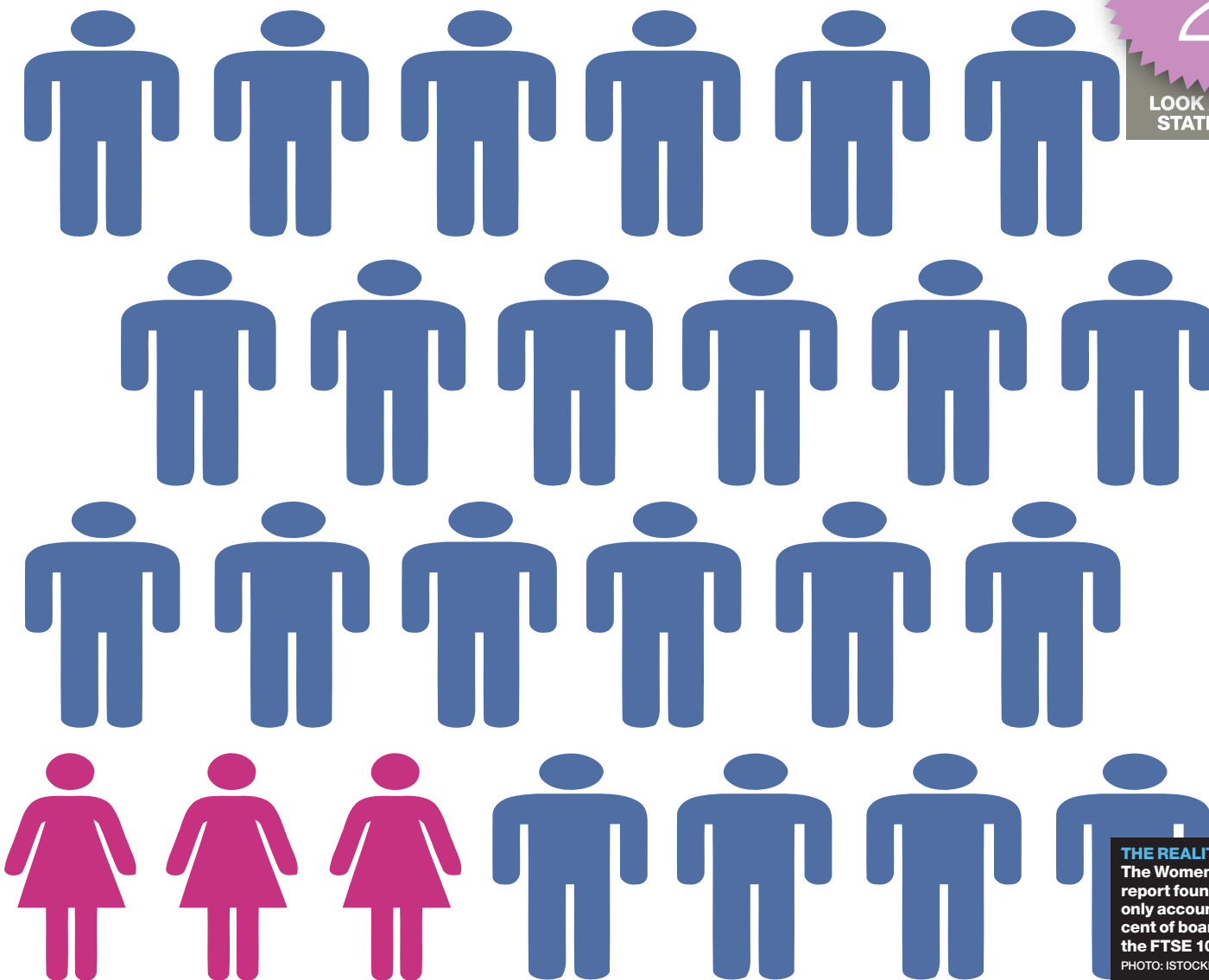
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NEWS

TIP

2

LOOK AT THE
STATISTICS

THE REALITY
The Women on Boards report found that women only account for 12.5 per cent of board members of the FTSE 100 companies
PHOTO: ISTOCKPHOTO.COM

Getting women on board

Question: What conclusions are made in the new report Women on Boards?

Answer: There are far too few women and this has a negative effect on business

A new government report into gender inequality in Britain's boardrooms makes a strong business case for appointing more women, who make up only 12.5 per cent of board members in FTSE 100 companies.

The Women on Boards report by Lord Davies of Abersoch found that companies with more women in the boardroom outperform rivals with a 42 per cent higher return in sales, 66 per cent higher return on invested capital and 53 per cent higher return on equity.

"The boardroom is where strategic decisions are made, governance applied and risk overseen," said Lord Davies. "It is imperative that boards are made up of competent, high-calibre individuals who together offer a mix of skills, experiences and backgrounds."

Appointment on merit only

He said board appointments had to



"It is imperative that boards are made up of competent high-calibre individuals"

Lord Davies of Abersoch

be made on merit, but questioned whether the best people always got the jobs. "The poor representation of women, relative to their male counterparts, has raised questions about whether board recruitment is in practice based on skills, experience and performance," he said.

FACTS

■ **Only 3%** of the UK's privately held businesses are led by a female CEO. This compares to the EU average of 10%.

■ **Across the FTSE 350**, less than 9% of directorships are held by women – almost half of which were non-executives in the FTSE 100.

■ **In the FTSE 250**, more than half of all companies (56%) had no women on boards, with women holding just 7% of director positions.

■ **Very few women** lead FTSE 350 companies as chairmen (1%) or executive directors (4%). There are 43 female directors across the FTSE 350.

introducing formal quotas because only 11 per cent of responses were in favour of them. But Lord Davies implied that the government might turn to quotas if other methods failed.

Quotas may be last resort

"The decision has been made not to recommend quotas, but the government must reserve the right to introduce more prescriptive alternatives if the recommended business-led approach does not achieve significant change," he said.

The report concluded that at the current rate of change it would take more than 70 years to achieve gender-balanced boardrooms in the UK's largest 100 companies. But Lord Davies has tried to speed the process up by getting companies to set targets. The 10 key recommendations include urging FTSE 350 companies to set out the percentage of women they aim to have on boards in 2013 and 2015. FTSE 100 boards were told to aim for a minimum of 25 per cent female representation by 2015.

DAVID SMITH

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Nikki Walker
Senior Director of Inclusion, Diversity and Sustainability, Cisco

The power of inclusion

Cisco uses its own technology to allow workers to do their jobs from wherever they want

Communications company Cisco Systems is using its own developments in video and online technology to drive its inclusivity agenda.

Technology allows Cisco workers to enjoy flexible working patterns that are the envy of many employees stuck in the traditional nine-to-five (plus overtime) office routine.

Anywhere in the world

Nikki Walker, senior director of inclusion, diversity and sustainability, said: "We can connect from anywhere in the world using our TelePresence video technology and we also do a lot of voice conferences using WebEx. So, our employees can literally work anywhere."

Nikki gives an example of an Irish woman who works for a Cisco team in the US. Rather than fly four times a year to the States, she drives to Dublin and spends a day video-conferencing, before driving home. "Cisco workers can manage their commitments to children or elderly relatives. It appeals to women with childcare issues, but there are also a lot of men in our Connected Women group because they are interested in the same topics."

Culture of trust

The technology works in harmony with Cisco's culture. "There's a culture of trust and empowerment," says Walker. "Obviously you have to deliver results, but then you can work however is best for you."

In this culture of trust, everyone is given a voice: "We want people to bring difference to the discussion table as it drives innovation, and makes our diverse customer base more comfortable with us. Our collaborative style breaks down hierarchies so everyone feels they can contribute."

DAVID SMITH

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INSPIRATION

Question: What are the L'Oréal-UNESCO For Women in Science fellowship awards for?

Answer: They have nothing to do with cosmetics, and help female post-doctorate researchers to carry out research

L'Oréal-UNESCO awards announced tonight

The 2011 L'Oréal-UNESCO For Women In Science Fellowship Awards will be announced tonight (28 June) at the Royal Society in London. Four female post-doctoral research scientists will be awarded fellowships of £15,000 each to help them further their research. We take a look at the eight shortlisted candidates.

Antje Weisheimer

Weisheimer is developing more accurate predictions of natural weather disasters in response to climate change at the University of Oxford. "Climate change is sometimes called 'the biggest threat to mankind'. Trustworthy predictions of precipitation, with its extreme and life-threatening consequences through floods or droughts, are essential for our society to plan for the future," she said.

Dr Carmen Galan

Galan is undertaking research into novel ionic-based tools for glycoscience at the University of Bristol. "Developing tools to make the study of cell surface carbohydrates possible, offers the

possibility of developing early diagnostic tests, as well as new therapeutics and vaccines," she said.

Emily Flashman

Flashman is investigating the body's regulatory systems and how they function normally, how they become damaged in cancer cells, and looking at preventative measures at the University of Oxford. "I'm studying how this damage might be prevented by antioxidants such as vitamin C," she said.

Freya Harrison,

Harrison is investigating how bacteria work together to create infection and illness at the University of Oxford. "Bacteria are amazingly social. Understanding the social behaviours that keep this bacterial community functioning could help us develop new ways of disrupting that community and treating infection. A good example of this type of complex infection is found in the lungs of people with the genetic disorder cystic fibrosis," she said.

'Polymeric structures could hold the key to protecting important historical artefacts'

Zarah Walsh
2011 nominee

Heather Whitney

Whitney is looking into iridescence and its function in the natural world at the University of Bristol. "My research focuses on iridescence found in the leaves of an ancient group called the spike mosses. Its function is not yet known, but I hope to look at these plants both in their ecological and evolutionary context," she said.

Monika Gullerova

Gullerova has discovered additional loops in the DNA structure at the University of Oxford, and is looking into their importance in the cell division process. "If the division goes wrong, it can cause mutation and illness," she said.

Vicky Coker

Coker is developing state-of-the-art imaging to map how toxic waste has an effect on plants and the environment at the University of Manchester. She said: "A key challenge facing society is the management and protection of our environment from toxic metal contamination.

The aim is to use imaging to discover the role some bacteria have in real-world environments, leading to a greater understanding of how we might remediate against toxic and radioactive metals."

Zarah Walsh

Walsh is researching the chemicals which can be used on timber to preserve historic objects and sites, such as King Henry VIII's warship Mary Rose, which sank in 1545. She carries out her research at the University of Cambridge.

She said: "It is an issue of great interest both culturally and scientifically. Maritime archaeological wood can be damaged by drying, biological attack and acid build-up caused by high concentrations of iron in the wood. Polymeric structures - large molecules made up of various numbers of repeating units - could hold the key to protecting important historical artefacts."

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2



3



1



STANDING OUT
 1. A L'Oreal employee working in one of their laboratories
 2. Last year's winners of the L'Oreal-UNESCO award
 3. Monika Gullerova is one of this years nominees
 PHOTOS: L'OREAL

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INSPIRATION

TIP

3

TRY A
DIFFERENT
ROUTE

TRAINING SCHEME
Claire Freeman joined the graduate training scheme at Jaguar-Land Rover which allowed her to experience working in different departments
PHOTO: JAGUAR-LAND ROVER

The route maps into engineering

Question: What are the best ways to get into careers in engineering?

Answer: Both apprenticeships and graduate training schemes offer good routes into the industry

HOW I MADE IT

With tuition fees rocketing and graduate debt spiralling, the apprenticeship route into engineering is a more attractive option than ever before.

And there are many other advantages to apprenticeships, according to Michelle Richmond, who did one with Siemens Plessey Radar at the age of 16, and is now — 30 years later — the Institution of Engineering and Technology's (IET) Director of Membership and Professional Development.

"Apprentices have a wide-ranging, practical experience of engineering because they work in so many departments," she said. "Later on, whether they go into project management, or theoretical design, they will have all the skills they need."

Valuable to industry

This flexibility makes them valua-



"They learn to be willing to try things out"

Michelle Richmond
Director of Membership and Professional Development, IET

ble to industry. "Because they work every day in industry, they grasp a lot of grass-roots information about design. And they learn to be willing to try things out."

In 1981, Michelle left school for an apprenticeship at Siemens Plessey Radar. The company sponsored both her apprenticeship and a degree on a day-release course. "They

invested nine years in my education, for which I will always be grateful. I'm delighted with where my career has progressed to and I'm proud I did a four-year apprenticeship," she said.

For engineers with a university background, graduate training schemes also provide a diverse experience of engineering.

FACTS

■ **Only 5.3%** (674,000 women) or about one in 20 working women are employed in SET occupations, compared to 31.3% for all working men (nearly one in three), in a total of 5.5 million women and men in SET occupations. This means a man is six times more likely to work in a SET occupation than a woman.

■ **Women make** up only 12.3% of the SET workforce, but account for 45.1% of the UK's total workforce (12.7 million women).

■ **Only 29.8%** (185,000) of all female STEM graduates of working age in the UK are employed in SET occupations compared to half (782,000) of all male STEM graduates of working age.

Graduate schemes

Claire Freeman, 27, who joined Jaguar-Land Rover in 2007, 18 months after completing her Masters, said: "On the graduate scheme, you have a home department, but you also do placements in other departments. Some do them in vastly different areas — even in marketing and finance if you want — and some do them in closely related fields. Through placements, some graduates discover new interests and end up in totally different departments."

After completing her two-year graduate training scheme, Claire returned to her home department at JLR, where she uses computers to predict how cars will behave. But the breadth of knowledge she gained from the placements has made her a better engineer.

"You learn a lot about different stuff, which is useful later on" she said. "When you are developing a car you work with different teams, so it's good to understand their issues. If you have two choices, you might know one wouldn't work for another department, so you choose the option that saves conflict."

DAVID SMITH

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QUESTION & ANSWER



Cigdem Kemal
Chemical Engineering student, Bath University

■ What was your project?

! During my gap-year placement, I designed modifications to fuel-gas, steam, water and nitrogen systems across the plant at LyondellBasell UK, in Manchester. After reviewing water and steam consumption, I proposed a number of maintenance and process changes. I also identified ways in which carbon waste from the processes could be reduced, leading to a virtuous circle of lower costs and lower environmental impact.

■ How much money did it save?

! £45,000 will be saved through the improved water system, £100,000 from a new fuel gas heater, £150,000 via the steam system and £30,000 from a flare system design. In total, around £325,000 a year will be saved on utility bills. I was very happy to be awarded the Centrica Environmental Awareness Award for the work.

■ Was the year in industry rewarding?

! The work really opened my eyes to future career possibilities. It was a fantastic learning experience that enabled me to apply and strengthen my academic knowledge, enhance my skills in analysis, process design and understanding project management. I was given responsibility to take my projects forward and to use my skills to bring them to a conclusion. It was really satisfying to see my ideas being used in practice and, like all students, I welcomed the fact that during the year I was also paid by the company!

■ What was your proudest day?

! On the last day I had to give my final presentation on all the work I had done for the company. My line manager told everyone that I was the most successful placement student he had ever supervised. He also said that the projects I was involved with were as good as a new graduate would produce. I was very pleased with his words, and proud to know that I had done my best.

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NEWS

'When I walked in, all the men stood up'

TIP

4

JOIN THE CLUB

Question: Has the financial world changed to become more inclusive?

Answer: It has changed enormously but much more needs to be done

When Diana Brightmore-Armour walked into her first meeting as a senior employee of Lloyd's Bank back in 2004, all the men stood up.

Diana, the CEO of Corporate Banking at Lloyds, said: "The room was full of males over the age of 45 and they really did all look the same. When they stood up, I said: 'Is there an emergency fire drill?' They said, 'No, it's because you walked in,' I said, 'That's very kind, but you must stop it as I'm not used to that. I worked for Coca-Cola before and they believe in equality, so it won't work for me'."

At Coca-Cola headquarters in a tower in Atlanta, there had been 150 nationalities. Moving to a world dominated by middle-aged white men was like entering another dimension.

Prepared for anything

But in one respect, her senior role at Coca-Cola had prepared her for her new life in the City. "I travelled to some dodgy places and I was twice held up at gunpoint,



Diana Brightmore-Armour
CEO of Corporate Banking at Lloyd's

in Venezuela and Colombia. When you've been held up at gunpoint, the UK's corporate world is not that frightening."

In 2004, Diana was Lloyd's first

external hire and took the job because of their commitment to making their workforce more diverse.

"It's changed dramatically in the seven years I've been here. We have a more inclusive culture and there are many senior women, including the heads of risk, retail and HR. My own management team was incredibly male when I came, but is now much more diverse," she said.

Encouraging diversity

There are also strong business arguments for having a diverse workforce. "Any company in the 21st century that is not at the forefront of gender equality is not at the forefront of the growth agenda. Gender awareness is essential if we are to make UK plc look like a modern brand with all the right policies. Our

business base is incredibly diverse, so we need to mirror that."

Lloyd's chairman, Sir Wyn Bischoff, is committed to gender equality. He was the founding chairman of the FTSE 100 30 per cent club, which aims to get 30 per cent of board members to be women within five years.

"The club was inspired by Lord Davies' report into UK boards. There's a lot of interest at the moment in gender diversity in the media, and that's fantastic. But we still have some way to go. I still hear funny stories about chairmen who say, 'Of course, I personally support it, but I can't get the board to support it'. 'But hang on a minute. You're the Chairman!'"

FACTS

■ **The finance** sector has one of the highest overall gender pay gaps in the UK economy — with women working full-time earning 55% less annual gross salary than men. The pay gap is 28% for the economy generally.

■ **The finance** sector provided 1.3 million jobs in Britain in 2008 and employed 4% of the workforce. Women made up 51% of employees over

2003-08.

■ **The gap** in annual basic pay between women and men is 39%, rising to 47% when overtime and performance-related pay, including bonuses, are taken into account.

■ **Women received** significantly (a gap of at least 5%) lower performance-related pay on average than men in 94% of cases.



DAVID SMITH

info.uk@mediaplanet.com

Mind that pay gap

Women in some of the UK's leading finance companies receive around 80 per cent less in performance-related pay than male colleagues, according to the Equality and Human Rights Commission

The Commission's Finance Sector Inquiry includes data from a questionnaire sent to 50 companies employing 22.6 per cent of workers in the sector. Nearly all women taking up new jobs in these companies still start on lower average salaries than men.

An unusually high proportion of workers in the sector fall into the 25-39 age group - the age at which women tend to have child-care responsibilities.

Key findings in the September 2009 survey (the most recent) were: Women employees earned an average of £2,875 in annual performance-related pay compared to an average of £14,554 for men — a gender pay gap of 80 per cent. There was a gap in annual basic pay between women and men of 39 per cent, rising to 47 per cent for total annual earnings.

Recruiting for the Future!

If you have just used a mobile phone, camera or MP3 player, chances are you have just used an ARM Powered® product. ARM is the world's leading semiconductor intellectual property (IP) supplier. We are helping to change the digital world with our low power chips catalyzing the global technology revolution as the world of mobile phones collides with the world of computing. Last year, there were over 6 billion ARM processors shipped by our partners.

Life at ARM is an exhilarating experience. Our success is attributed to the company's exceptional and ambitious people, many who are leaders in their field of expertise. We are a recognized global leader in innovation and have developed a strong and unique culture which enables people to connect, collaborate and create innovative products.

We are currently looking for talented engineers to join ARM in the following areas: Software, Tools, Research, Modelling, Verification, Graphics Hardware and Software, and Secure Services. Further to this we are also looking for Product Managers and Project Managers.

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Image: Comprehensive graphical representation of the Internet

At GCHQ, the Government Communications Headquarters, we're keen to see more women working in technology. You see, as one of the UK's intelligence and security agencies, we use the latest technology to protect the British people from terrorism and crime. So it's vital that our workforce reflects the diversity of the population. And we're taking active steps to make that happen.

Our unisex Gender Difference Network holds regular discussions about gender and equality. We've joined the national Opportunity Now campaign to tackle barriers to women's progress and encourage an inclusive culture in the workplace. And we're also in our third year of being a key sponsor of the Institute of Engineering and Technology (IET) 'Young Woman Engineer of the Year Award', which seeks to highlight the achievements of women in engineering and encourage others to enter the profession.

So we're pleased to tell you that women are playing a bigger part here than ever before. Women like Becca – a Cyber Security Specialist. She's a member of a diverse team that helps us understand threats and opportunities in cyberspace. We asked her about her experiences.

Why did you decide to join GCHQ?

"It aligned with my principles. A role in the private sector wouldn't be nearly as interesting, and I certainly wouldn't be able to make the impact I can here. GCHQ really invests in its staff, and there's a strong sense of support within the team. Plus, I'm trusted to manage my time flexibly according to the demands of my work. It's really refreshing."

What's a typical day like?

"The cyber arena is constantly evolving, so no two days are the same – we keep developing, to stay one step ahead. There's always an opportunity to be the first to solve a particular problem, report on a new technique or develop a new capability. The work is fascinating, relevant and important!"

Did your degree help you get the job?

"I studied Electronic and Computer Engineering, but the type of technical degree isn't critical – it's more about having the right mind-set. The skills I developed whilst studying, such as problem-solving and time management, have been invaluable."

What are the most important skills?

"I write software scripts to solve problems fast. I also design and support applications for distribution – often within challenging timeframes – so you must be able to deliver under pressure. Communication and team working skills are important too. You're expected to share your knowledge with a range of people, including those without technical expertise."

Have you had any training?

"There is lots of on-the-job training. You have to be prepared to be thrown in at the deep end from day one, but there are strong support mechanisms in place. External courses provide advanced technical understanding. They go far beyond the scope of commercial courses."

What do you like most about working at GCHQ?

"The fact that I was given such responsibility immediately was a real attraction. I also enjoy the freedom to experiment! If I think I have a good idea, there's no resistance about trying it. There's a real drive in the department for change and innovation, and when you add to that the opportunity to make a difference it adds up to a very satisfying role."



Our recruitment campaigns run at various points throughout the year, if there's no current vacancies that suit your skills you can register on our website to receive email alerts or RSS feed for when a new campaign opens. To find out more and explore our world of work visit www.gchq-careers.co.uk

Applicants must be British citizens. GCHQ values diversity and welcomes applicants from all sections of the community. We want our workforce to reflect the diversity of our work.



PANEL OF EXPERTS

**Question 1:**

What made you want to go into this career?

Question 2:

What does your work involve?

Question 3:

What are your experiences of being a woman at work?



Yewande Akinola
Environmental
Services Engineer,
Arup

As a child, I enjoyed building house models and hoped one day I would design affordable and comfortable buildings in the world's poorest regions. I liked all subjects but felt I needed to do well in science to give me a diverse range of opportunities. My mother influenced my decision to study engineering. She said an engineering background would give me many options — I could contribute to developed or developing regions in areas of water supply, transport, housing and power generation. She sold the idea of being multi-skilled so well that I trusted her!

I design water supply systems in offices, schools and stadium facilities. I also design products to support the design of sustainable renewable technologies in water supply systems. These include rain-water harvesting systems and solar-thermal systems. Developing creative practical solutions that have visible positive impacts on lifestyle has always been an inspiration. The world's progress is in so many ways "time-lined" by innovation, there is a genuine un-hyped sense of satisfaction from being a contributing part of that progress.

I had four years at university to get used to the idea that there were comparatively few women in the engineering industry. I must confess, however, there are many times I wish I worked with more women but I learn every day that it's important to develop the skill of professional interaction such that it transcends gender imbalance. Some people are less supportive than others, but I always ask myself: "Do I want to allow this to bring me down or help me improve my people management skills?" and: "Is this a good time to remind myself of my abilities?"



Kate Ho
Managing
Director, software
consultancy
Interface 3

I've always been interested in computing and technical subjects — I loved the idea of crafting something useful from nothing. Programming is essentially writing instructions for the computer to follow and that creativity was what drew me to the subject. The gender split in our computing class at high school was even and it was a surprise when I reached university to find only 15 girls in a class of 100!

Most of my work has been in designing experiences for multi-touch interfaces, in particular interactive tables such as the Microsoft Surface and SMART Tables, plus the iPad. I run a software consultancy and we specialise in designing and developing iPad games for children to play and learn collaboratively. It's so rewarding to see when the children learn a new skill because of one of our apps. I started the company just over 18 months ago and a large part of my job is in understanding how to design apps that are fun and easy to use.

For me, working in an SME environment, gender matters a lot less on a daily level. But I still despair when I walk into a tech meet-up or conference and realise nothing has changed in a decade — the number of women in computing is still around 15 per cent. New innovations inevitably come from science, engineering and computing and if we don't get a balanced workforce, we risk creating a society where the needs of specific demographics are prioritised. Diversity fosters creativity: as a result, I've been involved in groups such as BCS Women and Girl Geeks Scotland.

Ask the experts!



Laura Paterson
Junior Relationship
Manager on the
Oil and Gas Team,
Lloyd's Bank
Corporate Markets

I knew early on that I wanted to work in finance and always enjoyed business-related subjects at school. Many girls at university were interested in the 'corporate world' but not finance. As a graduate, I was keen to get into a large organisation that would offer me the chance to try various finance roles until I found the best fit for my passion and skill set. At Lloyd's, I've had some great mentors and a targeted development plan on the Junior Relationship Manager programme which enabled me to achieve Chartered Banker status early on in my career.

I work with an international client base in an exciting sector, which has been a fantastic experience on many levels. The role really tests my credit analysis skills given the highly complex financial needs of these global organisations — I have also had the challenge of understanding a whole new vocabulary of acronyms! I really enjoy meeting with clients and understanding more about their needs and how I can deepen the customer relationship. I'm also involved with industry research and reporting on everything in the Oil and Gas sector.

Gender has never been an issue for me and this is due to my positive experiences at Lloyd's, which has a big focus on attracting female graduates. Whilst the Oil and Gas sector is male-dominated, I have many inspirational senior female leaders, including our CEO of Corporate Banking, Diana Brightmore-Armour, who is passionate about supporting women in business. My Oil and Gas team is gender-balanced, which enables great discussion, idea generation and office banter making it a great place to work. I'd love to see more women in banking and times are changing.



Laura Sawyer
Clinical Scientist,
Royal United
Hospital, Bath

I went to an all-girls' school and I was encouraged to take physics and double maths at A-level as they were subjects that I had always enjoyed. As I was interested in the medical profession, my physics teacher suggested that I look into a degree in medical physics. I was offered a summer work placement at the hospital in Bath where I was able to see physicists at work. The Royal United Hospital in Bath now provides work placements for school children as part of the Science, Technology, Engineering and Mathematics Network.

Alongside routine tasks, I also do research projects with other groups of staff in the hospital. One rewarding project involved working with paediatricians to use newly digitised x-rays in the neonatal intensive care unit. I also provide radiation advice to the Nuclear Medicine Department, where patients receive a radioactive injection that allows us to look for abnormalities. For example, a non-functioning kidney will show up on an x-ray but won't be visible on a nuclear medicine image. These techniques can also aid surgery in breast cancer.

The gender split of trainees in physics in medicine is currently fairly equal. However, I am aware that the senior level of the profession is more male-dominated. I haven't come across any barriers to women, and as a Trustee of the Institute of Physics and Engineering in Medicine (IPEM), I hope that the boardroom will soon contain as many women as men. To improve female representation at a senior level, IPEM recently joined forces with the UKRC. I attended a Women in Leadership session which was thought-provoking and useful for meeting other women in my field.

HARNESSING THE POWER

element14
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Someone who knows all about the role of women in technology is Harriet Green, CEO of Premier Farnell, the leading distributor of electronics products and services to engineers globally. First attracted to the rapidly changing technology world of electronics and the fast paced environment of distribution back in 1985 she has stayed ever since and loves it! Under her leadership Premier Farnell has gone through a significant period of transformation with a strategy focused on innovative solutions for design engineers, the web and the emerging markets. The fortunes of the distributor have certainly changed with the share price hitting a ten year high in March and an ever growing list of niche technology manufacturers looking to partner with the group on a global scale.

Clearly a lover of technology and the opportunities it creates, Harriet herself appreciates and harnesses the power of technology in her every day work to stay connected – whether iPad, the new RIM Playbook she's testing, Skype, Facetime or a live satellite communications broadcast to Premier Farnell's 4500 employees globally – technology is a powerful enabler. "Our customers are working at the leading edge of innovation and we must constantly innovate in the services and technologies we offer them" she enthuses. And innovate they have.

Two years ago Premier Farnell launched the first global community for electronics design engineers – element14, named after silicon the 14th element in the periodic table – a place where engineers can connect and collaborate with others worldwide on design challenges and solutions as well as access data on the latest technology and constantly changing environmental legislation, download software and discuss challenges with industry experts from the world's leading manufacturers – dubbed "the facebook for engineers" it was an industry first. www.element14.com

To ensure that the Group and Harriet personally stays up with the very latest changes she created the Web Advisory Board – a global team of experts from inside and outside the group, both male and female, to advise and ensure the company's



The Web Advisory Board

web and mobile communications keep pace with the rate of change its customers and employees are seeing. Harriet also appointed Bee Thakore to be her Technical Assistant to help drive new projects forward – one of the Premier Farnell 'women in technology' featured below who met Harriet through the Group's sponsorship of the IET Young Women Engineer Awards, where Harriet was a keynote speaker.

The wave of innovation continues and the community this month unveiled the **element14 knode**, a unique automated platform that enables engineers to quickly research, design, develop and prototype in a single, intelligent environment - bringing together design tools, rapid Printed Circuit Board (PCB) prototyping services, engineering software and solutions, electronics information and technical data, within a single online location. The element14 knode's online browsing environment has been designed to allow customers to move intuitively through the different stages of the design cycle, moving from one of the numerous tailored "design rooms" to the next, until their design is complete. And there's more to come from Harriet and the team on this one.

Asked about the role of women in engineering, science and technology Harriet's view is clear... "At Premier Farnell we want the best person for the job and are focused on building a diverse workforce that represents the customers and communities we work with. Anyone can get on at Premier Farnell if they perform and have the right attitude, irrespective of age, sex, colour, creed, race, sexuality of physical ability." As someone who has lived and worked on all 4 continents, including Asia she is well aware of the growing influence of the region on technology innovation. Premier Farnell's Global Head of Technical Marketing, based in Asia, David Shen has worked alongside Harriet to dramatically increase the numbers of technical employees across the Group and he too has actively promoted women into technical roles. The Group offers the most expansive range of technical solutions in the industry, and its Global Technology Centre's based in India and China, are the perfect, environment to grow and nurture talent for the future. "Asia has hundreds of thousands of electronics graduates every year which is fueling the pace of innovation and change" she comments. "We need more engineers in the west too and talented women and men can help fill that gap"

There's been much debate about the role of women in the Boardroom and once again the Group leads the way. Harriet herself sits on the Board of technology giants Emerson and BAE Systems, both great innovators. Premier Farnell's Board has also just appointed Val Gooding as its Chairman. Asked about the role of women in the Boardroom Harriet is matter of fact " We need to work hard and contribute to the running of the organisation, like all Board Directors. An effective Board needs to be in touch with the needs of its customers, investors, suppliers and employees and so a wide range of experience and views is invaluable".

Recognising some of the distinct challenges women face the group has established a Global Women's Network and Development Programme and here to share their views on the subject are a few of Premier Farnell's own high performers....



Bijal Bee Thakore – Technical Assistant to Harriet Green

I look at myself as an engineer first, and my gender just happens to be part and parcel of the differentiating skills I bring. There is no doubt that the technology and engineering sector struggles to acquire enough females and businesses need women at executive positions in tech companies, something PF has done very well.

In my 10 years in engineering I've found if you focus on the problems you are solving and on results, then no challenges hold you up from success. I have worked in teams in previous companies where the gender ratio has been only 1 female in a team of 50, and this can be daunting or an isolating experience. Looking for mentorship or support (especially if you are interested in learning from a female mentor) is harder than in other professions, but there is plenty of support through WISE, WES, UKRC and many other organisations that help connect women in technology to share their experiences and advice. There are a few key folks within Premier Farnell that I turn to when I need guidance – valuable advice I have received is be approachable and proactive – it complements every integral part of being a technologist!

I was inspired by Premier Farnell when I heard Harriet speak at an IET Awards event and since joining I have broadened my skill set as an engineer to learn how to grow business and develop people. Now I get to work and collaborate to fulfil the designs of several Design Engineering teams, whether it is engineers designing heart rate monitors using our CadSoft EAGLE to working with university consortia that are researching the next generation in efficient lighting solutions. I have had the opportunity to project manage a multinational program, with accountability and a team across the globe and even a neat secondment designing an engineering specific brand - all critical to my professional development towards C.Eng..

We have an internal mentoring program, where I get to mentor other individuals in the organisation and am mentored by a senior leader I find very inspiring and in the last year, we also have an internal networking group focused on better opportunities from a diversity perspective where we can share our knowledge on technology trends, networking skills and development interests. I find the opportunity to participate in this group one of great value and pride. As part of our I Trust Agenda, I was privileged to work with students of two local schools designing and building radio-controlled cars to get a taste of engineering as a career choice.



Hazel Constantinou - Technical Manager UKI

When I first started working in the electronics industry, women Engineers were very unusual and although hard to ignore, were not often given the opportunities that their male counterparts were. The challenge for women in the industry is to ensure that they show that they are ambitious and keen to progress. This ensures that when opportunities arise they are actively considered and not sidelined

As the culture has changed at Premier Farnell women are being actively encouraged to develop their skills and given the opportunities to take on stretching projects and assignments, increasing our knowledge and experience and improving our profile within the business."



Anna Broadhurst - Technical On-Line Analyst

I have an MSc in Software Development and was one of the only women to successfully complete the course, gaining the highest mark and the award for best student. I worked very hard to achieve it but I believe I was judged fairly and wasn't made to work any harder than any other committed and talented student.

When I first joined Premier Farnell I was the only female software developer in the whole company but I was never made to feel anything less than proud of that. I was never treated differently or made to feel less important by male managers or colleagues. Very quickly more female employees joined Farnell in various technical roles and it is always a pleasure to work with them. There are many opportunities for internal networking and development through Farnell's diversity and gender initiatives and through our Women in Technology affinity group that I actually set up and now co-run globally. It is a very exciting time to be a woman in Premier Farnell.



Lynn Ma - Head of Semiconductors and Opto Electronics

When I went to university there were 4 girls on my course out of 70...studying and working in a male dominated field can be isolating socially. At Uni the men banded together to play sports and computer games and the women were left out. Even now people are still surprised when I say I'm an engineer. At university I used to feel I had to be better than the men to succeed.

Some companies talk about equal opportunities but its not always my experience. At premier farnell in the last few years I have found genuine support and have personally been involved in many activities, such as the women's networking group and I genuinely feel that PF is committed to career progression for women and men in a tech environment.

The support I get from my manager has superb and I am recognised by my colleagues for the work I do. This has improved my confidence and I feel appreciated and that I belong. It encourages me to grow further within PF and to utilise the opportunities on offer whilst being myself and not needing to behave like a man to succeed. We have good role models which is inspiring.

To learn more about Premier Farnell and careers within the Group visit www.premierfarnell.com or email corporatecomms@premierfarnell.com

FOR WOMEN IN SCIENCE



L'ORÉAL
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The 2011 L'Oréal UK & Ireland
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Announced Tonight

The world needs science and science needs women

A programme designed to promote and highlight the critical importance of ensuring greater participation of women in science, by awarding promising female scientists with fellowships to help them further their research.

Thirteen years ago the International programme was founded by L'Oréal and UNESCO. This year the UK & Ireland celebrates its 5th year.

Tonight, four outstanding female postdoctoral researchers will be presented with their fellowships at The Royal Society in London.

"These finalists are all great examples of what women can achieve in science and are fantastic role models. I wish them every success for the final and in their careers."

Sir Paul Nurse, President of the Royal Society

"We have been tremendously impressed by the strength of the applicants for this year's awards" says Professor Dame Athene Donald, Chair of the 2011 Jury

FOR FURTHER INFORMATION, PLEASE VISIT:

WWW.WOMENINSCIENCE.CO.UK