Women in technology

Sophie Beyer asks women in tech: What inspires girls to choose STEM subjects as an occupation?

Posted by Rianna Newman | June 20, 2017 | People

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Susan Bowen, Vice President and General Manager, EMEA, Cogeco Peer1, on why we should be inspiring more girls into technology careers

Britain is one of the largest eCommerce markets in the world and a ready adopter of new technologies. You'd think we'd be well ahead when it comes to digital skills and inspiring girls into tech careers, but you'd be wrong on both counts.

A study commissioned by Barclays UK, found that British workers are being outpaced when it comes to digital talent. For instance, when asked whether respondents would be comfortable in building a website, only 16% of workers in the UK said yes compared to 39% in Brazil and 37% in India.

Getting left behind

Why is this important? Significant investment in digital skills is the only way forward if we don't want the UK economy to get left behind. We've seen how digital operations like Uber, Airbnb, Alibaba and Skype have transformed the business landscape.

It's vital for the wellbeing of our economy that women play a central role in helping drive the digital revolution. They make up half the workforce, and it's already been proven that gender diversity in the workplace generates diverse thinking which translates into greater innovation and improved company performance.

All-round improvements

The demand for digital skills is across all areas of the economy but is rapidly surging ahead of our ability to deliver.

Of course, there are strengths. Our children are taught digital skills at school and the government has a coherent policy, but the UK's competitors are developing faster. We need to capture girls' attention at an earlier age by illustrating just how important science, technology, engineering and mathematics (STEM) subjects are in terms of careers and future potential.

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Foundations

STEM subjects are the foundations of the industrial and corporate world and contribute to the UK's position as the sixth largest manufacturer in the world. It's important to promote STEM subjects so we can fuel a pipeline of talent for the digital economy.

However, when a young girl is studying at GSCE level, the importance isn't always obvious. We need to challenge the view that STEM subjects are 'dull'.

There are a number of organisations doing good work in this area such as Apps for Good and Teentech. techUK works at the strategic level to bring the issue of women in technology to the forefront. An organisation called WISE engages people in business, industry and education to increase the participation and success of women in science and technology.

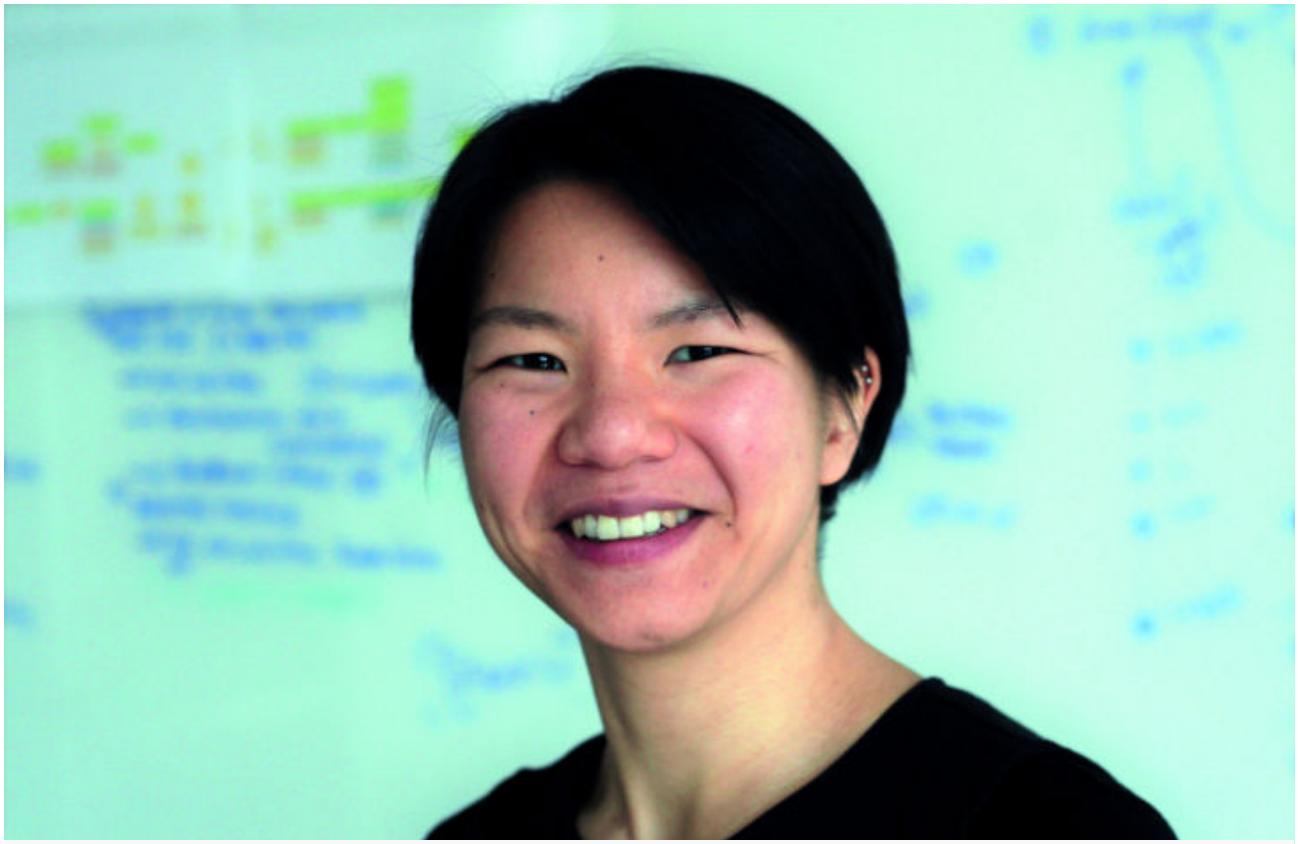
These initiatives are a start but we need more. Employers can certainly contribute. They can show what opportunities are available, such as roles in the video games industry, crime scene investigation, app developing, start-ups and even NASA.

Brave new world

There is already receptivity; we just need to harness it. Good STEM grades can lead to cutting-edge careers in virtual reality, artificial intelligence, machine learning, advanced cyber security and other new tech areas that are opening up.

Inspiration needs to happen in the classroom. If girls understand the real-world importance of STEM subjects they can be engaged at an early age. Likewise, businesses will more readily open their doors if the advantages of gender diversity in the workplace are more widely understood.

If we don't encourage women into digital roles, we're missing out on an enormous pool of talent and, as a nation, we could get left behind other economies. The UK can become a leading powerhouse of tech innovation, but as a nation we need to develop our digital skills to ensure this.



Elwin Chan

Elwin Chan from MathWorks was pushed into STEM by her school

I lead a team of software engineers to develop new features and offerings for MathWorks. This doesn't just mean writing and reviewing code, but incorporates thinking about the 'bigger picture'.

I'm lucky to work with a team of very bright people and we have a very collaborative environment. I also get a real kick out of seeing my team succeed – both individually and collectively.

> I think that more strong female role models in the workplace will help

My school really pushed the STEM subjects. My father is a structural engineer, and he was forever involving me in his many home projects, showing me how to solve problems in innovative ways given a limited set of resources. Both my siblings had also studied STEM subjects at A-level, so it seemed like a very normal thing for me to do. Neither of my siblings chose a career in engineering, so I think my father may have put extra effort in to encourage me to follow him into engineering by the time I was choosing university courses!

One of the things that frustrates me is the perception of what people working in STEM really do. Changing the misconceptions of society as a whole and creating an environment where everyone feels comfortable talking about STEM-related subjects would help – I think that the media, particularly TV and film could do a lot to help here.

I think that more strong female role models in the workplace will help too. Having attended an all-girls school and then an all-girls college at university, I spent my formative years surrounded by successful women, and I think this has helped me with my perception that anything is possible.

I have always loved technology and the development of new technology innovations continues to excite me every day.

Claire Vyvyan

Clare Vyvyan from Dell feels the tech industry needs to engage with girls early to combat stereotypes

Being the Senior VP and General Manager at Dell EMC, I help with the management of the UK and Ireland Commercial business on behalf of all our stakeholders.

What inspires me the most is its ability to advance every day and improve lives. For example, we have been working with Genomics England to collect DNA sequences of 70,000 NHS cancer and rare disease patients and their families, to help develop new disease diagnostics and create more personalised treatments.

To any girls looking at their future education options, first and foremost, I would recommend studying subjects you love and are interested in. Don't let peer pressure or teachers change your mind. The ability of science and technology to change the world and solve the world's biggest challenges is huge – and so is the route to exciting, highly rewarding, hugely creative and well-paid careers.

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At Dell, we partner with schools, supporting graduate scheme programmes and running mentoring programmes with inspirational women within the business. For example, we have an initiative called 'IT is not for Geeks', where staff visit schools and speak to students preparing to select their GCSE and A-level topics. The sessions are designed to encourage students to pick STEM subjects early in their studies and demystify beliefs about a career in the IT sector.

Technology has already evolved so much in my 30-year career in the industry. It's a huge advantage being a woman in technology, because you stand out. There is still some work to be done to get more women in STEM, but it's a challenge that I hope more men and women choose to take on.

Sophie Davison

Sophie Davison found apprenticeship is a good route into tech

I am a third-year Mechanical Apprentice Technician at Heysham 2 Power Station. I spent two years at HMS Collingwood and HMS Sultan learning the basics of engineering. Now back on site, I work with the maintenance teams, completing routine and emergent tasks.

I had no idea what I wanted to be when I grew up; I enjoyed every subject! My inspiration and role model was my cousin who is a Mechanical Avionics Technician within the RAF, who showed me that anybody can work in mechanical engineering. I was encouraged into the university route but as I felt that this was not for me I looked into other options and this is how I found apprenticeships. The schools I attended did not advertise apprenticeships, but they did push the STEM subjects; I felt I was very lucky in this, as school made these sorts of subjects interesting for all.

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> There is this perception that 'mechanical work' is dirty or manly

To girls considering their options I would say research apprenticeships or job opportunities countrywide and try to find work experience, so you can find out what you like and don't like.

Engineering offers such a range of jobs, yet there is this perception that 'mechanical work' is dirty or manly. But thanks to changing times and technology advancing this is not the case. Barriers must be overcome by finding a range of role models from all sectors of the industry and taking them into schools, and we can challenge these perceptions from a young age.

Rachel Fort

Rachel Fort, a development technologist for BP's Edge product development team, thinks part of the problem with women in tech is the 'leaky pipeline' of talent

I develop new lubricants for Castrol Edge, running engine-test programmes to evaluate new additive chemistries and components. This, along with chemical and physical data on formulations, must meet a wide range of industry and car manufacturer specifications. I then work with procurement, supply chain, marketing and technical deployment colleagues to ensure the formulations are launched in market. I'm currently working on a global project, upgrading Castrol Edge oils as new industry specifications are released.

> I think that the lack of female role models across STEM can be off-putting

Seeing the chemistry that I learned at school and university in action out in the real world is great! I never even considered studying engineering at university. I think what was missing was role models, or an appreciation of how STEM subjects could be used practically to solve real-world problems. That's why think it's really important for students to do all they can to keep their options open at A-levels.

While at university I knew that I wanted to do a summer internship, and after completing it, BP offered me a role on the graduate scheme, to start when I finished university. I spent over two years rotating around different teams in FPT, before gaining a permanent role working in Global Lubricants Technology.

I think that the lack of female role models across STEM, both in the media and in academia, and the very apparent 'leaky pipeline' can be off-putting. Studying chemistry, there was actually a pretty even gender split at an undergraduate level, but at PhD, postdoc less-so. BP is really supportive of part-time working, and this has allowed me the flexibility to fit my work around my PhD.

Catherine Campbell, Chief Technologist at Hewlett Packard Industry, realises how lucky she is to chance upon the IT industry

I work with HPE's largest partners and customers to help them understand how the technology that we create can help them deliver what their business needs. A lot of that is about listening to what they really want to do, and drawing parallels with what people in completely different industries are doing with the technology. In order to do all of this, I do need to understand how stuff works, but at the same time it's really important not to blind people with science or talk in acronyms. It's a process of translation, and a very rewarding one which constantly changes and challenges as the technology, the industry, and HPE all change and evolve.

> It never occurred to me that there were careers not open to me as a girl

The more work I do with women in STEM, the more I realise that I was very lucky. It never occurred to me that there were careers not open to me as a girl. I knew that I wanted to do something 'science' orientated, but like most people, I think I chanced upon the IT industry since I had no real idea what it involved (other than programming). I was offered a holiday job, and subsequently a sponsorship, by a British IT firm (ICL) and my brave manager put me, aged 18, in front of a board-level customer to explain the demo that I had written for them.

I nearly didn't choose the right A-levels – my initial choice would not have got me into any of the courses that I wanted to do, and I only just realised that in time. I am very glad to say that I think schools are much more switched on about guiding choices than they were. I chose Engineering Science at Oxford for the extent to which it kept my options open (translation: I had no idea which branch of engineering I wanted to go into!) and then moved to the Engineering and Computing Science joint course as I started to realise the real possibilities of computing.

My other, earlier, choice was to stay in an all-girls school for my A-levels – not a popular choice amongst my peers at the time, but without the support and encouragement that I got from all of my teachers I suspect that I would not have done as well as I did.

Ha Cole

Ha Cole, Microsoft's Chief Technological Officer for Education in Services, saw STEM education as a route out of poverty

My mother was born into a wealthy family, but she didn't get past primary school education because she was female. Unlike many women of her generation, she was determined that all seven of her children would have university-level education. Even more remarkable was that, after my family's fortune changed, my mother's determination remained steadfast. With that background, education is always important to me.

I was exposed to computers for the first time when I was 17, and I became so fascinated by programming that I decided to switch from an engineering to a computing degree. Even if I had gone into engineering, I would probably have ended up in computing given the widespread impact of digital technology across all industries. I recently came across schoolgirls who use machine learning to detect breast cancer. These are normal secondary schoolgirls – imagine what they will achieve in 5–10 years!!

My job involves providing advice and guidance to Microsoft teams around the world on where technology can help to improve education. I get to see education systems and changes across many countries. It is a privilege, a responsibility and a pleasure.

In my role, I am often the only female technical person in a meeting. As an introvert, my inclination is not to stand out. As a perfectionist, my inclination is not to speak up until I am sure. Over time, I learn to 'get over myself', to contribute and to lead. The more I lead, the more I surprise myself about how much value I bring. Don't let the fact that you are a minority stop you from making a valuable contribution.

Looking back, my choices and interest in STEM were sustained by having a strong personal purpose. Initially, my purpose was to get out of poverty and to be independent. It changed over time and now it is to help young people have a fun and effective learning experience using technology. Having a purpose helps when I find things challenging but more often, it helps to direct my energy.

> In my role, I am often the only female technical person in a meeting

Kerry Botha, Principal Geoscientist at Statoil, thinks students would benefit from mentoring or a 'big sister' to address the drop-out rate

I'm a geoscientist working in the exploration group for an international oil and gas company. In my role as an exploration geoscientist, I integrate geological and geophysical data and evaluate the location, size and viability of future oil and gas prospects.

> I have always felt the strong support and encouragement of my teachers and never encountered any barriers to pursuing a career in a STEM field

My favourite aspect of this job is the collaboration with different disciplines and integration of data. My role requires me to be creative, experimental and a bit of a 'jack-of-all-trades' when it comes to exploring for oil and gas.

I chose to pursue my higher education studies in earth sciences because I had an affinity for all science subjects at school. Throughout my academic career, I have always felt the strong support and encouragement of my teachers and never encountered any barriers to pursuing a career in a STEM field. This might have been different had I not gone to an all-girls high school. In my experience as a guest speaker at local middle schools today, I see that girls are generally a lot more reserved when it comes to offering up their opinion or coming forward with questions relative to the boys. As a result, teachers might not always be aware of their interest in STEM subjects.

I feel that a combination of encouragement and support from the teachers as well as for girls to see other girls excel in STEM fields can help to improve the number of girls pursuing STEM careers. And I've seen great progress being made at some of the local schools here in Houston, TX, where some even have all-girl robotics teams!

When it comes to tertiary education, I'm surprised by the drop-out rate of girls in the science fields. One way that we could maybe address this issue is to have similar volunteer presentations by professional women at the universities – not just guest academic speakers. At my company we also offer summer internships which are a great way for students to really experience what it's like to work in a science field. This could be extended to a mentor or 'big sister' sort of programme which would allow us to reach more students.

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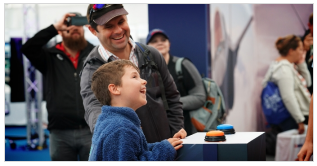

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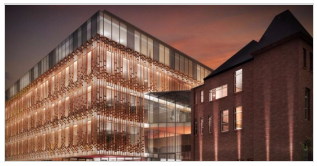

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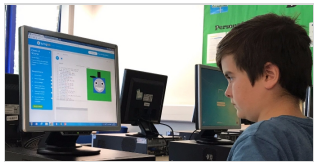

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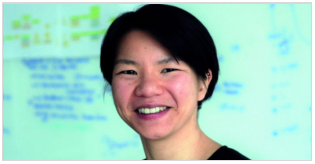

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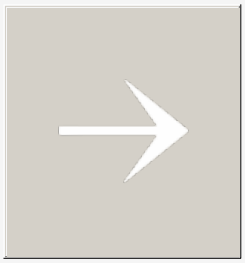

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