UK Computer Science Education in the 21st Century – Restoring Turing's Legacy

House of Lords, 20th March 2013
Our Moral Obligation to the Youth of Today

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THE CATALYST

Eric Schmidt, Executive Chairman and Former CEO of Google
Aug. 2011

"The country that invented the computer is throwing away its great computer heritage by failing to teach programming in schools. I was flabbergasted to learn that today computer science isn't even taught as standard in UK schools," he said. "Your IT curriculum focuses on teaching how to use software, but gives no insight into how it's made."
THE REALITY

Ian Livingstone, Co-Founder, Games Workshop, President & CEO, Eidos Interactive, Co-Author, Next Gen report - March 2013

“You know something is wrong when you have a million young people unemployed, and 100,000 jobs vacant in IT”
SKILLS GAP

John Harris, Commission Chairman, Corporate IT Forum Education and Skills Commission
January 2013

- Employment in the IT industry is expected to grow at nearly 5 times the UK average over the next decade
- Careers support and education for young people interested in pursuing a career in IT is still in disarray
- We are concerned at the requirement of schools to meet the costs of provision from their overall budget and the lack of guidance on minimum investment levels
- If the status quo in IT education remains, a widening skills-gap will take its toll on UK business.
- Without the right careers guidance and curriculum there is a danger that in the short-term the situation will only get worse, with employers forced to recruit outside of the UK to fill the gap.
- Unless immediate action is taken we will have whole swathes of the current generation of school children who are simply not IT literate enough to function in an increasingly digital world
THE CAUSE

- The standard of Computer science educational curriculum has steadily declined at all levels through from school to university over the past 10-15 years.
- The number of young people studying and choosing careers in IT has correspondingly decreased, and therefore not kept up with growing demand.
- Graduates are becoming less equipped to enter the job market meaningfully in a competitive market, with overseas students often being better qualified.
- Qualified IT staff often drift away from their areas of special expertise towards other activities.
- The sector suffers from an erroneous image problem with the stereotypical notion that it's only for ‘geeky guys’.
- Women are under-represented at all levels in the IT sector, particularly decision making positions.
THE EFFECT

- There has been a generational talent loss both in industry and in academia.
- This has resulted in lack of sufficient teachers and teaching skills to cover successive generations as well as workers to fill the plethora of jobs in the IT field.
- It is unlikely that this situation will abate over the short-term.
- The skills gap is predicted to continue in the sector and the shortage will affect all parts of the globe.
- This shortage of qualified staff in the IT sector is and will seriously weaken the whole economy.
> 7 million people work in the European IT sector
The European Commission projects a deficit of at least 700,000 skilled IT workers by 2015
Simultaneously the number of jobs has been steadily growing by 3% each year during the current economic crisis
The number of new Computer Science / IT graduates and other skilled IT workers has been diminishing during the same period

The IT sector contributes strongly to EU growth:-

- 5.3% of the EU's GDP
- 4% of its jobs
- 20% of economy-wide labour productivity growth
- + the EU’s most innovative and research-intensive sector - representing ¼ of the total EU research effort in the business sector
CURRENT UK WIDE INITIATIVES

CAS
Computing ++
Geek Gurl Diaries
Apps for Good
Tecnocamps
Young Rewired State
Games Britannia
Codeacademy
Young Rewired State

E-Skills UK
MirandaNet
Computer Club for Girls
YourSrc
Hack to the future
Coding for Kids
Code Clubs
NextGen skill campaign
Mozilla Webmaker
SOLUTIONS

- ‘reverse engineering’ – industry need to proactively working hand in hand with the universities to produce a curriculum which ensures that all computer science graduates are better placed to enter the workplace. Equally universities need to be more integrated with tech businesses.

- Employers must be more amenable to offer periods of training to bring new graduates up to speed in the specific area they seek to recruit and accept that they won’t always get the “perfect” skillset match from every graduate.

- Companies need be open to the possibility of retraining people from other disciplines to fill the skills shortage.

- Corporates need to incorporate half day release initiatives into their existing CSR programmes for IT employees, to enable skills transfer between industry and academia at all levels.

- Companies need to provide more investment and support to address the IT skills crisis.
SUCCESS

Achieved by:-

- Long-term collaboration and commitment
- Concerted, coordinated programme between government and industry

Measured by:-

- rise in the number of graduates in IT-related curricula
- reduction in the IT skills gap
- conversion of unemployed to employed
It is incumbent upon the current generation of IT professionals to ensure successive generations are at the very least IT literate enough to function in an increasingly digital world.