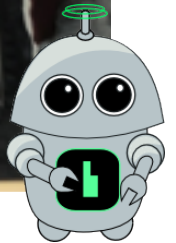


#include computer science for all

March 2013.
1ST Edition.



International
Women's Day



WELCOME TO #INCLUDE

Our aim is "Computer Science for all" - 'to increase the diversity of the students studying Computer Science, to challenge the stereotypes and to create accessible opportunities to experience the subject first hand.'

Welcome to the first #include newsletter, released to coincide with International Women's Day on the 8th March. We are a working group within Computing At School attempting to increase the diversity of the students studying Computer Science, to challenge the stereotypes and to create accessible opportunities to experience the subject first hand. This year there have been many well publicised instances of a lack of diversity causing issues in the IT industry, ranging from the conference speaker selection process to representation in the board room. We recognise that these problems begin at school, where many students are put off studying Computing because of perceptions about gender, race, disability or socio-economic status. For example, of the 3809 students who studied A-Level Computing in 2012, only 8% were female. However, #include is not limited to just encouraging girls, we want to offer opportunities for as many students as

possible to be able to experience Computing - whilst of course realising it will not be for everyone! We also want to support teachers who are keen to offer inclusive learning opportunities for their students and in the future we hope to offer some of our own resources. The group is entirely run by full time teachers and academics and we welcome any CAS member who would like to be involved - please get in touch with me (laura@casinclude.org.uk) to be added to our working members mailing list.



Laura Dixon:
#include Chair.
Twitter: @CASInclude
Facebook: CASInclude

EVENTS

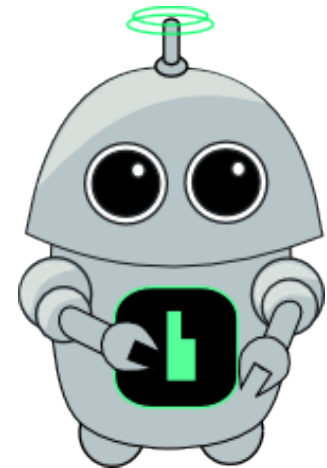
#include Launch Party

29th April 2013
BCS London,
WC2E 7HA

#define:

a conference for
11-13 year olds.
15th June 2013
Rugby School.
Warwickshire





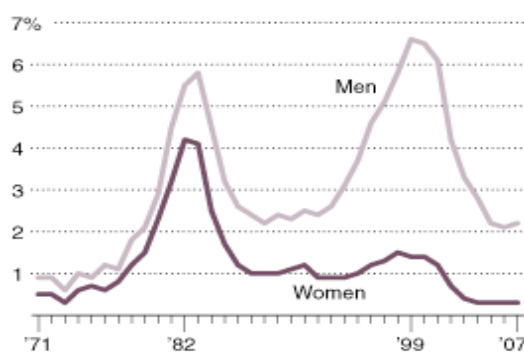
#INCLUDE & COMPUTING AT SCHOOL

Computing At School ¹ (CAS) started some five years ago with the express aim of both encouraging teachers of computing to engage with Computer Science in their classrooms and to establish Computer Science as a subject discipline in the curriculum of all schools. As we teach Physics to all because we live in a physical world, and Chemistry because we live in a chemical world so too we should be teaching Computer Science because we live in a digital world!

Computer Science is not a niche subject for the few; it is for all, including those under-represented in our

Widening Gap

The percentage of female college freshmen who list computer science as a probable major is 0.3 percent, down from 4.2 percent in 1982.



Source: U.C.L.A. Higher Education Research Institute

THE NEW YORK TIMES

community. The number of girls taking A Level Computing has fallen to an all-time low: less than 150 took AQA Computing A Level in 2012! In 2009 the number of women studying computer science at university was a mere 16%.² The gender gap represents one of the most important issues facing all of us who work in this area in our schools.³

I am delighted that the **#include** team are working within CAS to provide support for all those in schools who wish to see participation in this fascinating subject increase, in particular amongst those for whom Computer Science has not been seen to be popular in recent years. CAS has had tremendous success by working with local teachers, encouraging them to share ideas, resources and best practice with each other. No-one is better placed to bring about change than these wonderful people. Following the recent announcements by Michael Gove to change the school curriculum and include more Computer Science in the Computing curriculum we have a once in a lifetime opportunity to ensure that no-one is excluded. Let's take it!

Simon Humphreys
National Coordinator Computing At School

¹ <http://www.computingatschool.org.uk>

² <http://www.guardian.co.uk/education/2012/jan/10/fewer-girls-taking-computer-science>

³ <http://www.nytimes.com/2008/11/16/business/16digi.html?em&r=0>

Save the dates!!

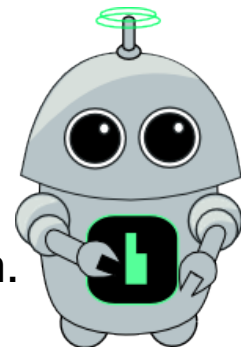


LAUNCH PARTY

DATE: 9th April 2013

Time: 6:30-8:30pm.

LOCATION: BCS Offices,
Southampton Street, Covent Garden.



KEYNOTE: Kate Russell

There will be light refreshments, networking opportunities and a chance to get ideas for the classroom.

#INCLUDE CONFERENCE

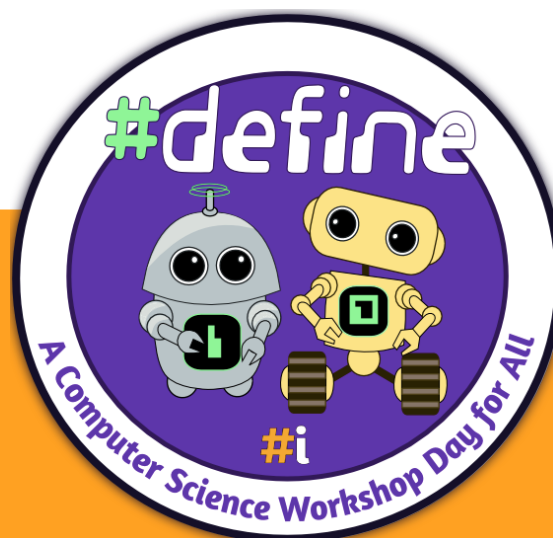
DATE: 15th June 2013

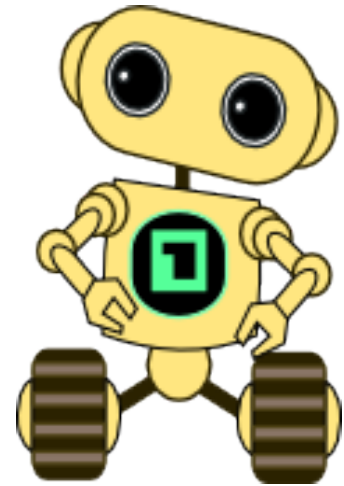
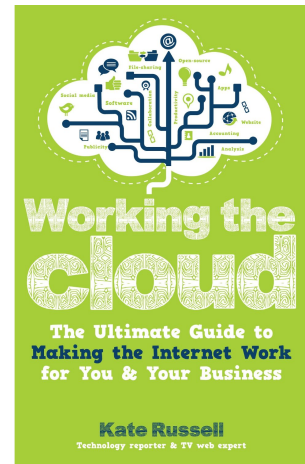
LOCATION: Rugby School, Warwickshire.

INFO: The conference will be free to attend and will offer interesting speakers as well as a range of practical workshops.

ATTENDING

We are looking forward to welcoming you at our events. If you would like more information please email: info@casinstitute.org.uk





Exclusive article by Kate Russell about Inclusivity and e-business.

I've been keeping BBC viewers updated with what's happening on the web since January 2006. Imagine the changes I've seen; Facebook was still a closed college network and Twitter wasn't even an egg in the hatchery's eye. The web itself was born in 1994 and when I started working on Click it was behaving like most pre-pubescent teens – moody, difficult, and prone to going blue in the face occasionally. Browsers could be unstable; you were under constant threat of malware; badly made pages loaded slowly; if you didn't look where you were going you could end up in some very dark places. Early adopters out of curiosity rather than necessity might have been scared off using technology altogether, who could have blamed them? If that sounds like you it might be time to reintroduce yourself to the web though, because it has grown up to be a very gifted and helpful young adult. Even if your business has nothing to do with the Internet you'll find a mind-boggling

Check out
Kate's new
book.

amount of tools and resources online that will help you improve, automate and run your life and business more smoothly – most of them free too. If you're just starting out you don't need to pay hundreds of pounds for office equipment and software when there are virtual and free alternatives online. The web will even act as your own personal assistant, keeping your diary and reminding you of who does what. I wrote 'Working the Cloud' to give people a taste of what's out there to help. From start to finish it is everything you need to know to make the Internet work for you, instead of against you. You can order it at <http://bit.ly/orderworkingthecloud>, or just come along to <http://workingthecloud.biz> to read the latest news and features. See you there!

Biography

Kate Russell has been writing about technology, gaming and the Internet since 1995 and now appears weekly on BBC2 and BBC World News, reporting for technology programme Click. A regular expert on the sofa at ITV's Daybreak and various other TV and radio stations, she writes columns for National Geographic Traveller magazine and Web User magazine. Her book 'Working the Cloud' and companion website workingthecloud.biz is the ultimate collection of online tips, tricks and resources for small businesses, start-ups and entrepreneurs who want to get ahead online. It will be published in March 2013.

TEACHING COMPUTING THROUGH DANCE LANGLEY GRAMMAR



Stacy Jenkins
Langley Grammar School.

Are you doing anything at your school that we could use as a feature in the newsletter for other teachers? Send any ideas to newsletter@casincluder.org.uk

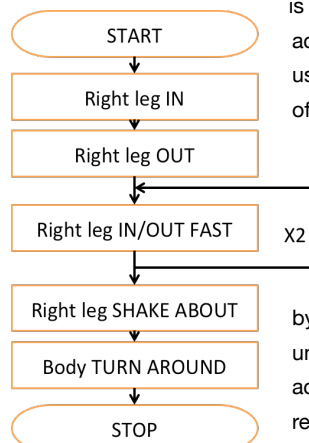
Langley Grammar School has embraced the teaching of computing by launching a 'Computing through Dance' project developed and led by Stacy Jenkins.

The 'Computing through Dance' project was developed to appeal to girls and incorporate computing in an innovative way into the current Key Stage 3 ICT curriculum. The idea came from a year 6 lesson in their Digital School House, where students followed a sequence to the Michael Jackson Moon Walk.

The project starts by creating flow charts of instructions to perform dance moves of a well know dance like; the Hokey Cokey or a Tudor dance which many children study in Key Stage 2. The initial objective is to develop the understanding of a sequence and appreciate the importance of accurate instructions. Loops are then introduced for repeated instructions within the dance.

A hilarious video clip of an animated character doing the Hokey Cokey was used but students could always volunteer.

Next, the concept of selection is introduced with the introduction of a question; if the whistle blows, then freeze in a pose, else perform the dance. Once the concepts have been understood, students then have to create a dance with four dance moves; the dance must include at least one repeat and a pose for when the whistle blows. The dance sequence is written in a flow chart.

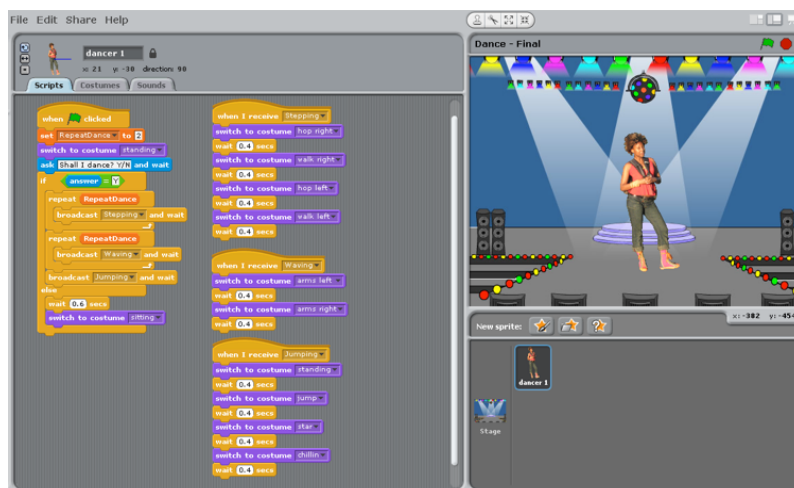


As space can be an issue, students are given rules for the dance moves: they have to remain on their chairs and the dance moves are only with the upper body. The class vote on a music style from some given samples. Latin style music was the most popular. Students can practise some 'hand jiving' to get the idea before their creativity flows. Once the dances have been perfected and the flow charts completed, the students record their dances using video cameras. Peer feedback is next; the videos are watched by the class while the students present their flow charts. A score is given on the clarity of instruction, accuracy of sequence, use of repeats, use of a question and overall quality of dance moves.

The 'Computing through Dance' project then evolves into using Scratch. Students choose a dance character to perform a sequence of dance moves and by building on the students' previous understanding in the kinaesthetic activity they are able to include repeats and a selection question. This project can be extended to add a variable to determine the number of times the dance sequences is repeated and later to introduce the concept of procedures for the more complex dance moves.

The 'Computing through Dance' project was successfully inclusive at Langley Grammar School and students were enthused by the activities while being introduced to computing concepts.

"I can honestly say I have not laughed so much in a classroom for a long time".



Dr Dave Millard is the computer science (ECS) admissions tutor for University of Southampton. He shares his tips on how to get a top place at a great university.

'At ECS we have to differentiate between thousands of applications to only a few hundred places, but we do it in a very transparent way. Each application is looked at individually, your references, personal statement and performance at interview are all important, especially if you think you might just miss our standard offer, but by far the most important criteria is your predicated A level grades. We are especially interested in Maths at A level, not only because our degrees contain a fair amount of Mathematical content, but also because success at Maths is a great indicator that you can succeed at ECS. Maths requires logical and systematic thinking, and an ability to abstract problems, all key

requirements for our degree programmes.

We are a Research University, exploring what is possible at the very edges of technology, so we also look for personal qualities such as enthusiasm, creativity, and self-motivation. In your UCAS applications and interviews you should follow the maxim of show don't tell - so rather than merely stating that you have these qualities, show us the evidence by explaining what you do, and why you love doing it.

My final piece of advice is that looking for a University is not about getting in to the 'best' place. It is about finding the best place for you. Different Universities have different characters and communities, and there are lots of factors to balance - reputation, course content, location - as you look around, take notes, record your impressions, and make sure you choose a place where you will love to live and study!'

**cut out & give
to your
students**



UNIVERSITY ADMISSIONS TIPS FROM DR DAVE MILLARD (ADMISSIONS TUTOR AT SOUTHAMPTON UNIVERSITY).



Dr Dave Millard

Dr Dave Millard is Admissions Tutor at the University of Southampton, he is a lecturer in Computer Science and is passionate that the University recruits a diverse range of students who are creative, engaging and keen to learn.

www.ecs.soton.ac.uk

Thank you
very much
to Bruce
Ahern for
these
posters he
has made
for his
classroom.

Women in Computing

Martha Lane Fox



In 1998, Martha co-founded Lastminute.com, an online travel and gift business. In 2005 she sold her share of the business for £13,000,000.

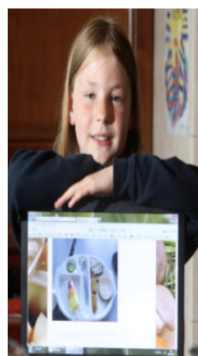
In 2009, she was appointed the UK Government's Digital Inclusion Champion with the aim of making the British public more computer literate.

In 2010 she became the UK Digital Champion, advising the government on internet issues.

"lets continue to show women all over the world that the wider technology industry is a fascinating and miraculous place"

Women in Computing

Martha Payne



Disappointed by the quality of her school food, Martha (aged 9) set up a blog "neverseconds" Her blog quickly gained national attention with Jamie Oliver tweeting "shocking but inspirational blog. Keep going, big love from Jamie x"

The local council attempted to ban her from blogging in June 2012. However several newspapers successfully campaigned to allow her to continue blogging.

Martha's blog has had over 9,000,000 views and raised £120,000 for starving children in Malawi.

Women in Computing

Meg Whitman



In 1998 she took over as Chief Executive of EBay. The company had 30 staff and revenue of four million dollars.

She revolutionised the company in the ten years she worked as chief executive. When she left the company had over fifteen thousand staff and revenue of eight billion.

She is the fourth wealthiest woman in California with a net worth of \$1.3 billion.

"lets continue to show women all over the world that the wider technology industry is a fascinating and miraculous place"

Women in Computing

Valerie Thomas



Valerie Thomas worked as a mathematical data analyst for NASA.

At NASA Valerie developed an image-processing system for "Landsat," the first satellite to send images from outer space.

She invented the Illusion Transmitter which is creating new ways for surgeons to look inside the human body.

Over the course of her career Valerie-j contributed to computer program designs for research related to Halley's comet, ozone hole studies, and Voyager satellite development.

BRUCE'S POSTERS

The posters will be available to download from our website in the next coming weeks so you can use these in your classrooms.

RESOURCES

Do you have any posters or resources you would like to share. We would love to showcase them. Please send them to newletter@casinclud.org.uk

COMPUTING GCSE & GIRLS



Dan Gardner (CAS Master teacher) discusses the introduction of computer science GCSE and its impact on the gender balance at Perins School.

Since introducing the GCSE Computing course at Perins School, we have seen the number of students choosing to study the subject steadily increase from 20 children in the first year, to 26 in the second year and 38 in the current year.

This is an optional subject, so the increase in numbers year on year is very positive. What is less positive though is the gender divide; of these 84 students only 3 are girls! There has always been an argument that girls simply don't want to study Computer Science, but I now have some evidence to the contrary. The girls in these classes are doing very well, and I received this amazing email from a parent recently:

*"Dear Mr Gardner
My daughter is really enjoying her Computing GSCE and is thinking about a possible career in IT. I wondered if you know whether there are any opportunities to do work experience ... and if so, who would be the best person to contact? Thanks very much."*

There is hope then, and I am going to develop some intervention strategies over the

next few months to see if we can encourage more girls into GCSE Computing at our school. I have identified a small group of girls who I think would make excellent Computer Scientists, based on data (in particular scores in "non-verbal reasoning" cognitive ability tests).

Intervention strategies with this group will include question and answer sessions, taster activities, work with parents and hopefully (if we have the time) a visit to the Electronics & Computer Science department at the University of Southampton.

I will be producing a report based on this pilot project as part of my continued professional development, so I hope that others will be able to learn from my experience. I really hope we can encourage more girls to study Computer Science at our school; once they are in I'm sure they'll be hooked!

**Dan Gardner (CAS Master Teacher)
Team Leader for ICT & Computing,
Perins School (Hampshire)**

Debate: Teaching Boys and Girls separately or together?

Year 7 Computational Methods Lesson:

After reading Computational Thinking and Women in Computer Science, a thesis by Christie Protsman. I wanted to try and experiment with my class. I was about to introduce Flowol 4.0 to them. They had not seen the software before and I wanted to challenge them. I asked them to load the Lighthouse mimic and told them that there were some symbols on the left hand side that they could use to control the lighthouse. I challenged them to find out how to make the inside light turn on and the lamp to flash continuously. I gave them no further instruction. I gave them a problem and asked them to work together to find a solution.

At this point I split the class into pairs. I paired girls together and paired boys together. I told them that we would have a girls vs boys race to see which group could get the lighthouse to work first. After reading the study I found that girls worked well together but paired boys tend to not work so well together and I wanted to test this out.

Girls often perform at a lower level than the boys in the control module, this is why I thought I would try a different approach. The lesson worked well, most of the girl groups were the first to finish with the boys quite close behind. It was only a marginal difference really. However, the big change was in the lessons that followed. Girls were putting their hands up to answer the questions, they were engaging in Flowol with much more interest and they performed better overall, compared to previous years.

Now if this was a science experiment, I would not have performed very well as it wasn't the most scientific way to test out a theory. However, I think that there is some scope for boosting the confidence of the girls in the classroom in order to improve their interest in the subject. Why don't you try it out in your classrooms and let us know?

GET INVOLVED

What is going on around the UK

Lovelace Event: Nottingham

The BCSWomen Lovelace Colloquium is a national one-day conference for women computing students, and it's the main opportunity for women undergraduates who are into computer science to get together. Every year it is hosted by a different university, and this year we'll be meeting in Nottingham on April 4th. The day has talks from women in industry and from academia, and it also involves a panel session on computing careers, and stalls from employers looking to meet the best young women computer scientists. But the best part of the day is the poster contest, where each year students bring posters describing their own work. During this session the undergrads (and any other people who are interested) can see what students do in other universities, and get to show off the cool things they're working on themselves. We're now in our sixth year and we're expecting about 150 people this year.

Every year we open the event up to local schools, so if there are schools with A-level students in Nottingham or environs who'd be interested in coming along, hearing some talks, and getting a view for what computing at uni is like please do get in touch. Whilst the event is a BCSWomen event and is therefore targetted at women and girls we're always open and inclusive; guys are welcome to see what we're up to and can come for the day too.

The colloquium is run by Dr Hannah Dee, a lecturer at Aberystwyth University. Please get in touch with her via our email for more information.

Technocamps: Wales

One of Technocamps' main targets is to provide our services and resources to all young people aged 11-19 across wales' convergence area. Our workshops are open to students of mixed abilities, ages, backgrounds and cater for our welsh speaking participants within the workshops and throughout our resources. The computer science industry is thriving with professionals and students from a variety of backgrounds, our government funded project strongly targets the next generation of CS enthusiasts, encouraging them and most importantly supporting them during their transition into the industry. We have recently been conducting workshops specifically aimed at young female students, teaching them games development using the popular educational resource 'Scratch' encouraging more young girls to consider computer science within their education and future careers. We have also launched our Technoclub Robotics Competition for young people that are considered to have low aspirations or perhaps have additional learning needs. This competition is an opportunity for the students to learn about programming and robotics using provided LEGO NXT and Arduino Kits, working in their Technoclub groups to produce a robot to compete against one-another in July. Our diverse delivery teams and workshop environments provide a



Events

welcoming and engaging foundation for young people of all backgrounds to learn about Computer Science and STEM based subjects, providing a platform for our participants to give Computer Science a go in a fun and practical way.

For more information on Technocamps, please go to www.technocamps.com.

Free A/S level computing text book by Peter Kemp:

http://en.wikibooks.org/wiki/A-level_Computing/AQA

"Lacking money for KS4/5 computing textbooks, get yours free at wikibooks"

Do you want us to advertise any events?

Would you like to see any of your events or organisations featured on the newsletter? We would love to feature them. Just email newsletter@casinclud.org.uk

GET INVOLVED: CONTINUED

What is going on around the UK.

Generating Genius

Distinguished education academic and social commentator Dr Tony Sewell founded Generating Genius in 2005. His vision was to work with high-achieving students from disadvantaged communities throughout their secondary school careers to help them acquire the skills they need to win places at top universities. Generating Genius alumni, now undergraduates, in turn become mentors to course participants, feeding their experience back into the programmes. 'The programmes we offer are intended to be challenging,' says Dr Sewell. 'The students are expected to maintain a high standard of self-discipline, behaviour and academic performance. 'We do not believe in prizes for all. Whilst one can learn from the experience of the journey, ultimately there is often only one winner. 'By bringing together academically talented students from some of the most challenging social circumstances, our programmes are able to offer a unique educational experience, one geared both to the students' high abilities and to their need for peers who share their academic abilities and their love of learning. 'This is a nurturing programme where students have a sense that they are on a journey from 11 to 18. This rites-of-passage programme is based on intellectual and social challenges. They learn that poverty, race and gender are not barriers to academic success.'

Please check out

www.generatinggenius.com for more information.

Stemettes

Stemettes is a project set up to inspire the next generation of females into Science, Technology, Engineering and Maths (STEM) fields by showing them the amazing women already in STEM via a series of panel events, hackathons and exhibitions.

Head Stemettes Anne-Marie Imafidon decided to set it up after speaking at the Grace Hopper Conference in the US and hearing of the decline in numbers of women in Technology. She got back home to find that the

number of women in the UK STEM workforce had fallen from 17% in 2011 to 13% in 2012, and two-thirds of females graduating in STEM subjects weren't entering the STEM workforce. Looking back, being one of 3 girls on her Mathematics and Computer Science course at University never bothered her - she graduated with a Masters in Mathematics and Computer Science from Oxford aged just 20 - so she decided to reach out to females who don't consider working in STEM as something for them; hence the Stemettes' 'Girls do Science too' strapline.

They're always on the lookout for women from across STEM to sit on panels, help out at the hackathon and share their skills at the exhibition. Find out more details about upcoming events by visiting the Stemettes.co.uk website, following them on Twitter @Stemettes, liking them on Facebook, adding them to your circles on Google+ or joining their mailing list.

Geek Gurl Diaries: @ MissPhilbin

As a secondary school ICT Teacher I noticed that the uptake of ICT and Computer Science by teenage girls at KS4, KS5 and higher education was also just as limited, and that female students would opt for subjects which are seen as more creative such as Art, Dance, or Humanities. As a woman in tech myself I started to think about what I could do to improve the status quo. What was it about science, technology and computer science that excited me, and how could I get that across to young people?

I knew that I wanted to develop a network of individuals who could through their own experiences inspire a generation to take up more traditionally geeky subjects. The theory being that by exposing students to the range of creative and exciting scientific careers in technology, they may discover an interest in a

field they had previously dismissed.

Utilising my skills as an enthusiastic teacher of ICT, I set out to provide teenagers with an opportunity that I never had, access to people working in the tech industry, and resources demonstrating how to create, build, make or do different tasks using tech skills.

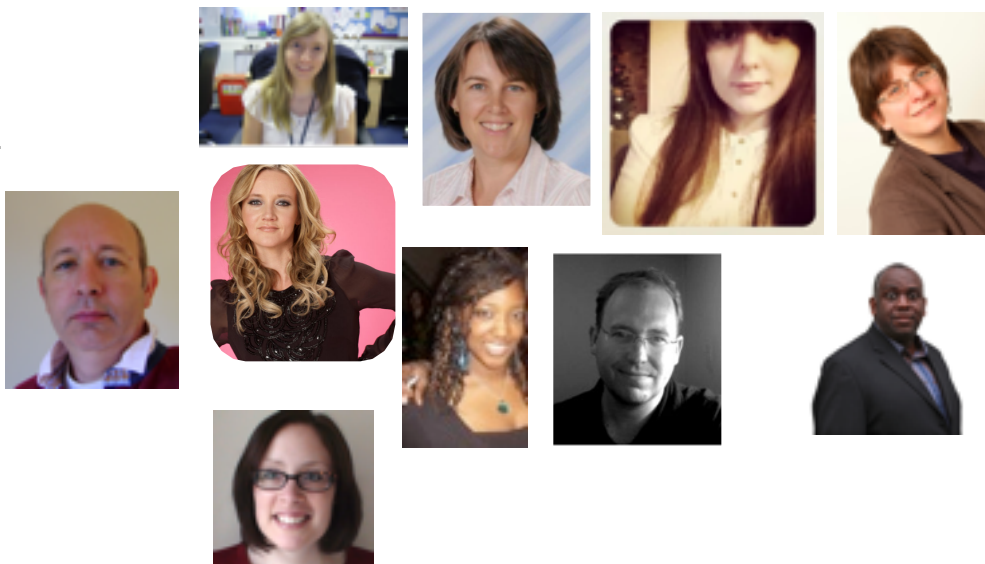
Working with young people, I know how powerful YouTube can be in grabbing their attention and entertaining them whilst also informing them. I make videos for my lessons and put them on YouTube so that students can access them in and outside of school to aid their learning therefore it seemed like a great place to start. I created a channel for all my ideas and The Geek Gurl Diaries were born.

They are a collection of video logs about using technology and interviews with inspirational women in the fields of computing, science, technology and engineering. They also include video contributions from women working in IT and Science, and recently the channel has started to include 'Geek Gurl Diaries On Air' panel discussions with graduate computer science students on various topics like computer gaming and geek culture. I have done very little marketing, but found organic growth through the teenage girls I'm targeting "liking" the Facebook Page on which I publicise the video episodes.

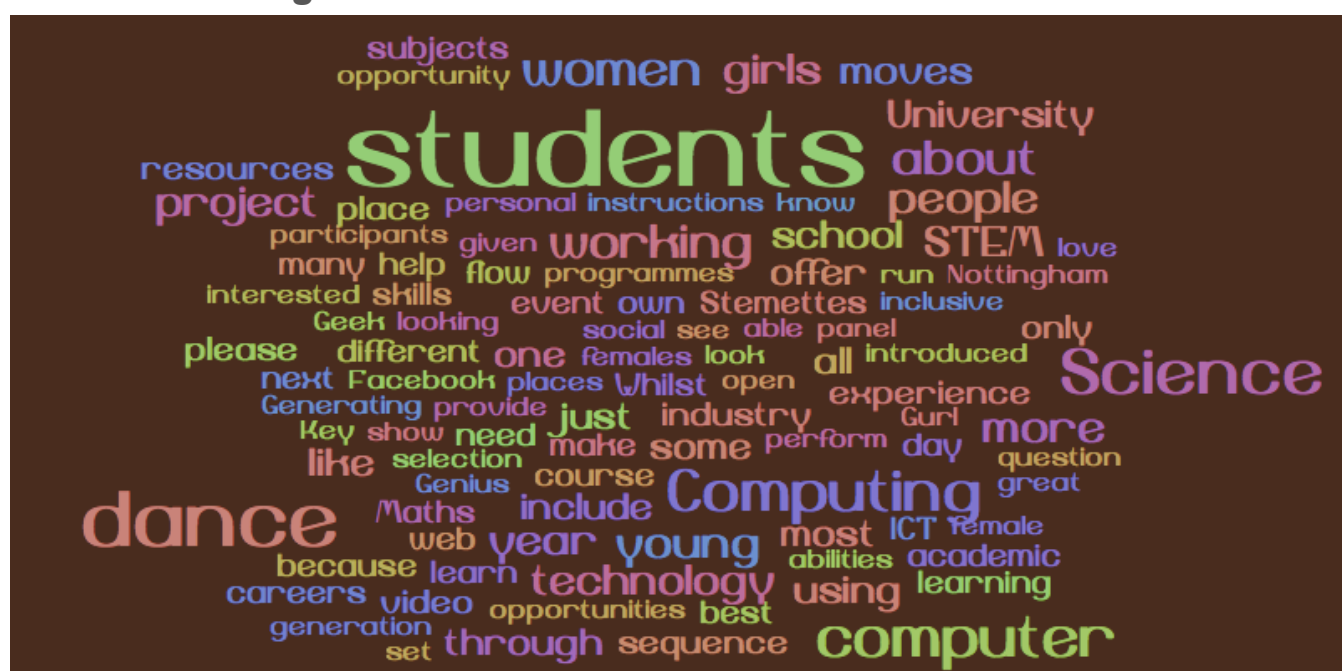


THANK YOU:

Simon Humphreys
 Laura Dixon – CAS include Chair.
 Carrie Anne Philbin – Vice Chair
 Kate Russell
 Stacey Jenkins
 Dr David Millard
 Bruce Ahern
 Peter Kemp
 Dr Hannah Dee
 Sophie Dare Edwards
 Tony Sewell
 Anne-Marie Imafidon
 Rebecca Franks
 Dan Gardner



This edition's tag cloud....



We rely on your support, so please get in touch for any ideas, input or for a chat.

#INCLUDE TEAM

The team consists of teachers:

- * Laura Dixon: Chair
- * Carrie Anne Philbin: Vice Chair
- * Rebecca Franks: Secretary
- * Dawn Hewitson: Treasurer
- * Newsletter Edited by Reena Pau

Get in touch if you can help

- Sponsor our events
- Speak at our events
- Visit our wiki and contribute
- Add our logo to your website
- Join our working committee

We would love to hear from you.

We are always on the look out for new content. Please email:

newsletter@casinclude.org.uk

**NEXT EDITION:
 SUMMER 2013**